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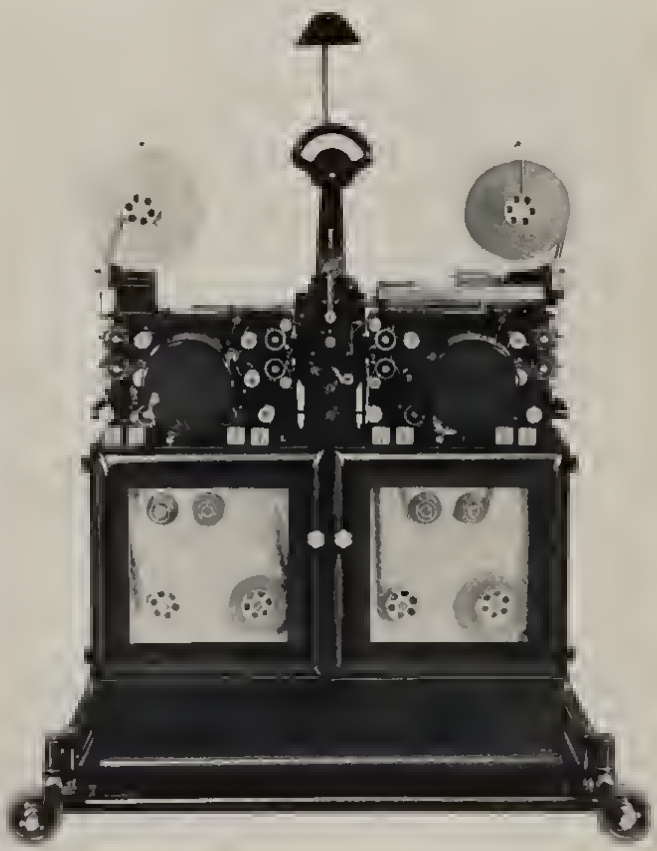

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Volume XII MARCH, 1932 Number 11

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PUBLISHED MONTHLY by THE AMERICAN SOCIETY of CINEMATOGRAPHERS INC HOLLYWOOD, CALIFORNIA
SUITE 1222 GUARANTY BUILDING HOLLYWOOD CALIFORNIA
Established 1918 Advertising Rates on Application Subscription U S $3 00 a year Canada $3 50 a year Foreign, $4 00 a year single copies, 25c
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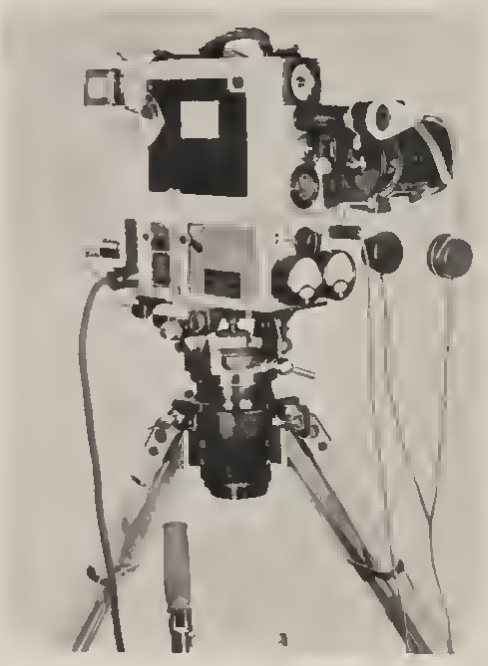

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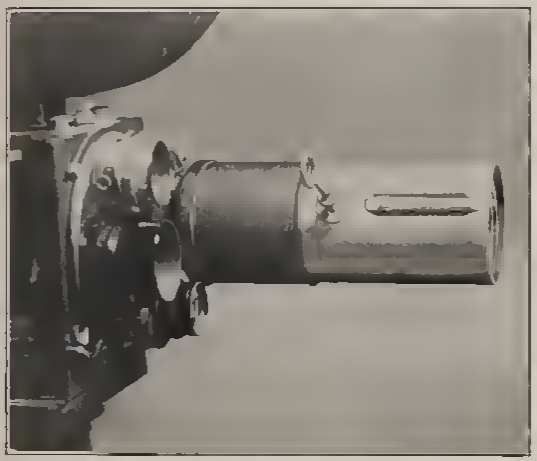

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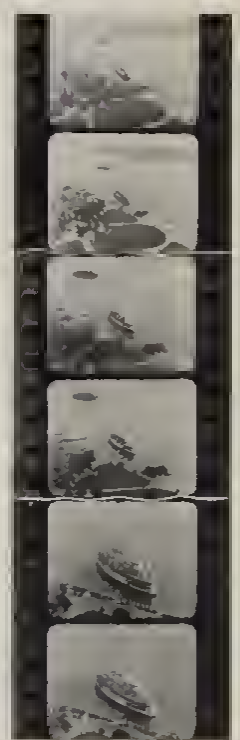

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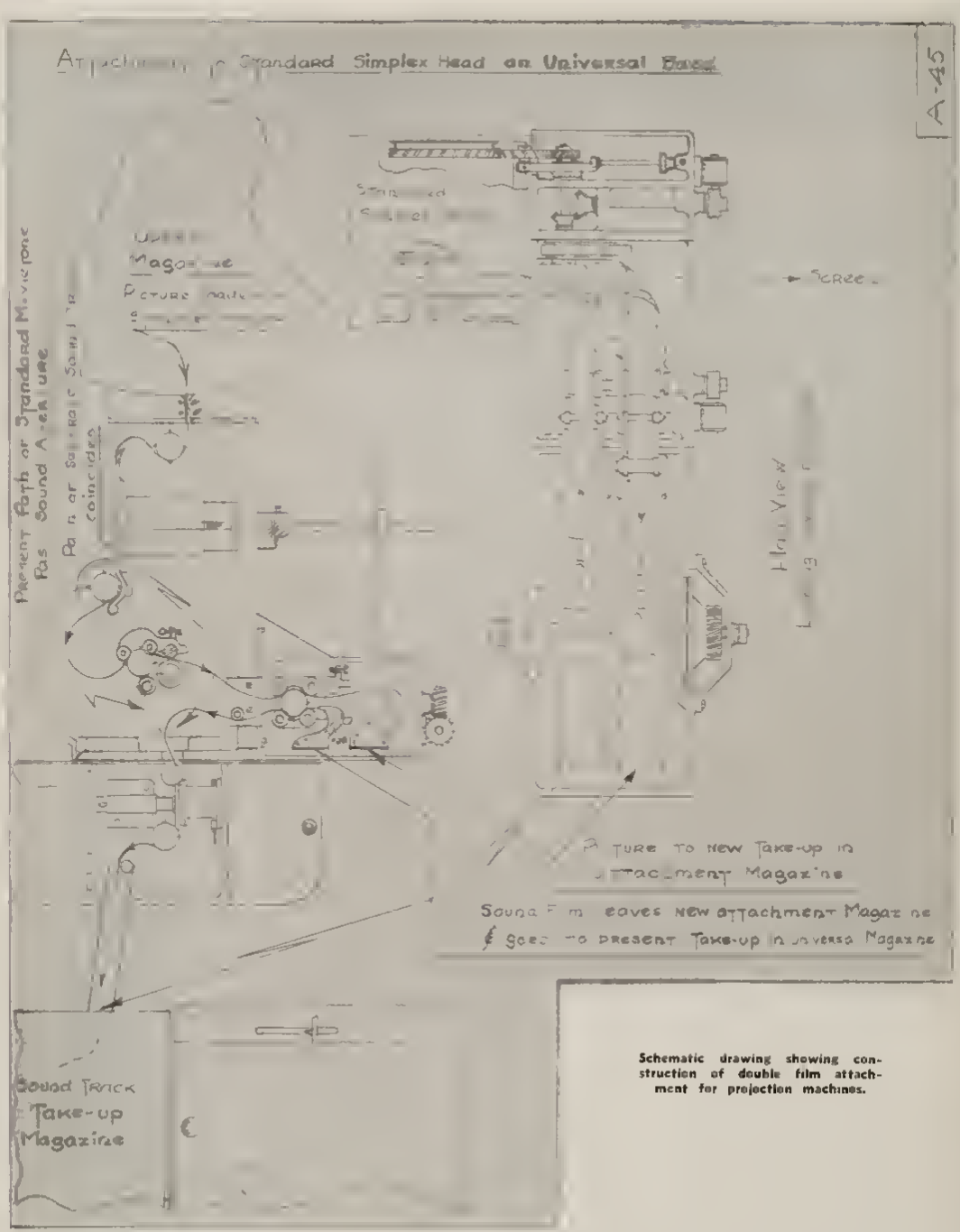


Schematic drawing showing construction of double film attachment for projection machines.

Double Film Attachment for Projection Machines

by **WESLEY C. MILLER**

THE USE of separate film for picture and sound has thus far proven to be the best method for studio production work. With certain exceptions, the major studios are using this plan even though it is somewhat less economical to use than if a single film were used. Thus far, at least, the increased film cost is over-shadowed by the greater flexibility of the double-film method in editorial handling.

The use of the two films has, however, presented a big problem in projection. The first solution found was the application of an entirely separate sound reproducing machine running synchronously with the picture projector,—thus a reproducing machine for each film. This has produced excellent results but has the disadvantage of requiring additional expensive machinery-maintenance and space-requirements in projection rooms in the studios.

Quite recently, several designs have appeared of units which may be attached directly to a standard picture and sound reproducing machine, to enable both films to be run on a single machine. The immediate application of these attachments is for preview work where it is desired to project a double film version of a production in a theatre which has facilities for a normal single film program only.

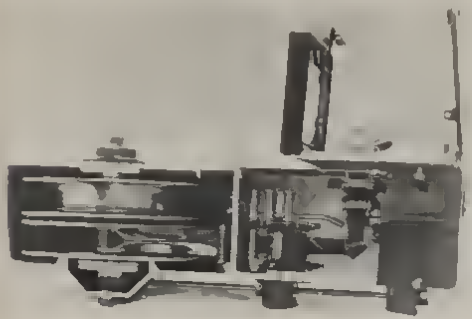
The accompany illustrations show one of these attachments designed and constructed by the Metro Goldwyn-Mayer organization for this purpose. The attachment consists of a light casting mounted on a plate which replaces the front plate of a standard projector. This casting houses certain sprockets, and provides a mounting for two additional magazines. The full picture reel is placed in the upper picture magazine, and the picture film is threaded through the projector in the usual manner, except that instead of it being taken into the regular takeup magazine below, it passes out into the new attachment and into a takeup reel mounted in the latter. The full reel of sound film is mounted in the attachment, and is threaded out through it and down through the regular sound reproducing mechanism and into the lower takeup magazine of the projector.

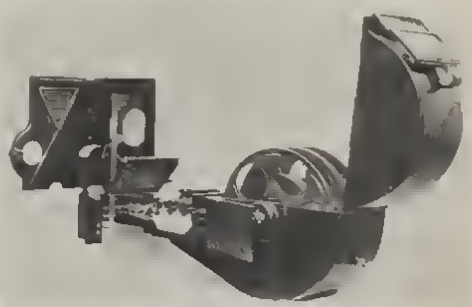
Briefly, the attachment provides a takeup magazine for the picture, and a feed magazine for sound, but picture is projected and sound is reproduced in the standard machine exactly as it would be in the case of a single film. The transfer from the standard machine to the attachment occurs just below the intermittent movement for picture, and just above the sound aperture for sound. In both cases suitable loops are maintained, which so far as the standard machine are concerned, are practically identical with those which are obtained with single film operation.

The whole attachment is mounted on a plate which replaces the front plate of the projector. In installing it, the projector front plate is removed and this new plate, which is part of the attachment, is mounted instead. A gear mounted on the attachment plate, and provided with suitable adjustments, meshes with the main driving gear at the back of the projector, and provides the driving power for the sprockets and the takeup magazine on the attachment. The entire operation of mounting the attachment, including removal of the projector front plate, is a matter of five or six minutes. In an emergency, the change can be made between reels.

Suitable door arrangements are provided on the attachment, so that with film running it is entirely enclosed, but the film is visible through glass windows. The doors are readily opened for inspection purposes, or to permit of threading film. The threading operation is simple, involving merely threading over two additional sprockets. It has been found by experience that but one-half to one minute more is required to thread both films in the machine with the attachment than to thread a single film in the regular machine in the usual manner. Thus, the attachment imposes no hardship upon the operator, and offers no time hazard in preparing the machine for the next reel in the limited time usually available.

The two original models of this attachment were placed in use in a production projection room in the studios for several weeks before sending them out for preview purposes. The immediate reaction of the operators was that they would rather have these attachments than to use a reproducing dummy in connection with the projector. In addition, in the entire test period, not one case of film breakage occurred which could in any way be attributed to the use of the attachment. With this record behind them, the machines were put into preview use and have been uniformly satisfactory for that purpose in every case.





Two views of double film attachment described by Mr. Miller

Talking Pictures in India

by **WILFORD E. DEMING**
Executive Manager, The Radio Installation Company

WITH one exception, I have been privileged to be the only American directly connected with the Indian Film Industry, and under my supervision was produced India's first sound and talking picture

In November of 1930 I established my first contact with India, and as an engineer enjoyed a most interesting working comparison of the picture industry as it is today, and as it was fifteen years ago, a comparative technical and operative space of time as represented by the Indian producer, and, as an executive, experienced the opportunity of moulding an organization and forming a pattern for a watching industry as a whole, passing the transition period from silent to sound with an attempt to eliminate many of the faults brought to light during our like period in Hollywood

This first sound and dialogue picture swept all of India like wild fire, eclipsing by more than ten times the greatest silent picture gross and sailing from India for the second time, I have just received a radiogram . . "TOLLYWOOD SENDS BEST WISHES HAPPY NEW YEAR TO LUBILL FILM DOING WONDERFULLY RECORDS BROKEN . . . ", which reports my latest release which opened on the night of sailing

In passing it might be explained that our Calcutta studio was located in the suburb of Tollygunge Tolly being a proper name, and Gunge meaning locality After studying the advantages of HOLLYGUNGE we decided on TOLLYWOOD There being two studios at present in that locality, and several more projected, the name seems appropriate

During the fall of 1930, the possibility of producing sound pictures was first entertained by one of the leading producers of Bombay, and arrangements completed for recording equipment To Mr Edmund Hansen I owe the greatest debt of gratitude To him was made the request for the recommendation of an engineer to proceed to India for the purpose of preliminary installation and instruction I sailed from Los Angeles Harbor on what promised at least an interesting 'round the world trip, little expecting the momentous events which followed Knowing nothing of Indian producers or production methods no advance plans were made

My arrival in Bombay and my subsequent period of life amidst the luxuries of the east showered upon me shall ever be remembered Royal suites . . servants . . cars all were mine! Never lived such a potentate! But above all, the opportunity to achieve was freely and fully given, and every facility made available

A survey of Indian producing methods provided quite a shock, and quite antedated my experience in motion pictures, extending over eight years Film was being successfully exposed in light that would result in blank film at home, stages consisted of flimsy uprights supporting a glass or cloth roof or covering The French DeBrie camera, with a few Bell & Howell and German makes, completed the list of photographic equipment Throughout, the blindest groping for fundamental facts was evident, The laboratory processing methods . . with sound in view . . were most distressing, and obviously the greatest problem Even today, this problem exists, though the past year has seen acceptable progress Satisfactory prints have always been most difficult to achieve.

After exposure, the film is wound on racks holding about 150 feet, and at this point roughly broken with a loss of as much as two frames These racks are then developed and passed thru the successive stages of processing, in flat tanks into which ice is placed and added, in a sufficient quantity to bring down the temperature to 65 degrees in a surrounding temperature of 90 or more with humidity exceeding 90% Naturally the ice melts rapidly, diluting the solution of the bath, so that in the processing of any given magazine of film, it is impossible to expect constant densities over any appreciable length This is of paramount importance where sound recording is to be considered Furthermore, few standards of cleanliness have ever been considered, and flicker-

Left to right. Amar Mullick, B N Sircar, head of New Theatres, Ltd., Wm Howard, American Commercial Attache, W E Deming, M-G-M representative and I A. Hafesjee

ing, scratched film was accepted as normal. Marks on the negative from racks and drying drums and ordinary bubbles in the emulsion, caused by the racks of film being splashed about in the flat tanks, were immediate problems to be corrected before attempting production of sound pictures. Disregard for "unnecessary" improvements permeates the industry, and the feeling often expressed that 'Anything is good enough for the Indian Public" provided further elements for combat.

In the rooms designated for editing and splicing there was at least evidence of progress in the shape of a waxing machine and an automatic splicer, but both lay in dusty corners, covered by rust. Slicing went on thru the means of six or eight men squatting in the midst of a floor full of film, the utter disregard of fire danger was surprising, negative being totally unprotected during all stages of preparation. Joining by means of tongue and scissors. With the tongue the emulsion end was wet, then scraped with the scissor's blade, cement applied, and the splice held together until dry. Obviously not "production" methods, but with the low cost of labor, each splicer probably receiving the equivalent of 15c a day, many hands turn out the work of a few machines.

We in California are familiar with the Mexican expression of 'Manana", tomorrow. "Manana" is a very poor example of the Indian custom of apparently earnestly accepting an instruction, invariably resulting in "Yes Sir, I'm JUST doing it", though the order may have been given days or weeks past.

New Theatre's Studio under construction at Calcutta

A complete assembly of Mole-Richardson lights, easily the pride of a Hollywood Independent, was provided, but experience proved that all but the requisites for flat lighting were superfluous. Artists among Indian Cinematographers are very few.

Hollywood may feel a painful condition of too much "family" in studio organizations, but India far surpasses in this evil. Simply a family connection is sufficient to place one as a director or cameraman. Unhappily this is mirrored in Indian films. Unless very closely associated, it is impossible for a Westerner to appreciate this condition of the Eastern society, where a transgression leads to ostracism from family or caste ranks. So closely are Indian organizations built around these family or friendship ties, that a serious order or correction is seldom given for fear of offending, and instructions are received with always the apparent reservation of execution when and where it may please the individual.

It was in this maelstrom of strange circumstances that I found myself, and from these foundations it has been my privilege to build.

Upon the completion of India's first sound picture, I returned to America in order to take full advantage of the opportunities so apparent in this just awakening country,

Left to right, Production Manager C. Bose; Director Kapur and Chief Cinematographer Nittin Bose on the set during shooting of 'Gole Bakoli" at Calcutta

planning a quick return. Bombay had for long been the principal producing center of India, but Calcutta, the second city of the British Empire, had been awakened by the great financial success of Bombay's first talking picture, and eagerly awaited the opportunity of entering the field.

During the home visit, I signed a permanent contract, and Mrs. Deming and I sailed for a world honeymoon with Calcutta as the immediate destination.

Calcutta provided a complete surprise, contrasting the rushing haphazard methods of Bombay. Here I was presented with the nucleus of what has become a real production unit. Formed by several of Calcutta's leading citizens who had wisely surrounded themselves with competent assistants, well financed and with an ambitious program of producing pictures for India actually comparable to those of the independent Hollywood companies, this company was building on a firm foundation.

Awaiting my final instructions for completion, was a spacious steel, brick and concrete structure housing the sound stage and laboratory. Not only was every modern convenience added to this lot, including rehearsal halls, dressing rooms, showers and chemical sanitary system, dining room, power plant, extensive garages and a large, well equipped carpenter shop, but the entire lot has been landscaped, lawns, trees and hedges being laid out, and a grass tennis court constructed.

A complete air conditioning plant supplies the laboratory, and though a machine developer is expected soon, double vertical tanks are now used for all baths during processing. In this manner, ice is only added as necessary to the outer tank, and there is no dilution of the bath.

Action shot during shooting of "Shakuntala" at Calcutta

Large rooms, especially protected against dust, and heated or cooled as necessary, house drying drums, electrically driven, in contrast to the usual Indian method of hand turning

The latest Bell & Howell automatic continuous printer is in use, and cutting and editing facilities are completely modern, with machine splicers and Moviola equipment

"RICO" studio sound recording equipment, mounted in a Ford truck, together with DeBrie and High speed Bell & Howell Cameras, and a very complete set of Mole-Richardson lights complete the equipment.

The sound stage, approximately 60 by 150 feet in size, is well sound-damped, and free from external disturbance to a remarkable degree We have worked in the midst of very strong thunder storms with no ill effects, and cars continually move about the lot

During the first month of operation, in the midst of heavy Monsoon rains and terribly high humidity, a bit of trouble was experienced with noisy microphones, though no actual days were lost, several retakes were necessary, always obvious at the time of action Dynamic microphones seem the only answer to all year operation in India

Following the completion of satisfactory tests, two pictures were produced, the first in the Bengali language for Calcutta and North Eastern distribution, and the second in Urdu for general release During November and a part of December, the studio was rented under very satisfactory business arrangements, to a Bombay producer, who made two pictures, both in Urdu

Widely varying languages over the whole of India present some problem, though a majority of the profitable release centers may be reached by Urdu or Hindi Even story values vary greatly in different sections

Scripts are very frequently prepared from Arabian Nights' tales with a few original adaptations Almost universally, the tragic ending is preferred . . with the happy climax in heaven and strange and various are the conceptions with double and triple exposures abounding

Like Hollywood in their first sound pictures, India forgot the art of MOTION PICTURES, and I well remember my efforts to please by cramming "some sound" into every foot of my first picture But today, the Indian director is making motion pictures WITH sound, of a vastly improved overall character

One interesting phase of Indian work is the complete indifference with which the microphone is received Remembering our trouble from "Mike Fright," and realizing the limitations of illiteracy in India, I expected a great amount of difficulty which never materialized In five pictures that I have supervised, there have been practically no retakes necessary because of the addition of dialogue

Financially, the Indian film industry is rather strangely aligned There are few individual companies adequately financed Rather, there will exist a company foundation, and after a script is prepared, finances for this particular production will be obtained, and the picture and company property pledged as security Often, individual directors will obtain financial assistance, and by renting the use of some studio property and equipment, produce a picture Production costs are usually quite low, averaging, all costs included for operating a fairly modern sound studio, 15,000 to 20 000 Rupees per picture with a gross of normally 85,000 to 100,000 Rupees for a Urdu production, with an all-India release Due to being "tied" to the depreciated British Pound, the Rupee is today worth about 25c, the normal value being 36c It is easy to speak in large production figures in India . . and still not spend much money

There are very few contract players, officials or technicians Unfortunately, the industry is not sufficiently stable to carry a large overhead over an extended period of indefinite conditions The leads of an average picture will receive as high as 500 Rupees a month . . . $125, but usually 200 to 300 is a closer estimate In almost all cases, artists are hired on a picture to picture basis Extras often surprisingly hard to find, may receive a Rupee or so a day for their services

Bombay, having for long provided most of the cinema offerings, is better prepared for casting than Calcutta Two of the pictures I made in Calcutta were with almost exclusively inexperienced people, due to the difficulty of obtaining suitable Urdu speaking leads Often, due to illiteracy lines must be individually taught the actor or actress, and on one or two occasions, lines were read from a blackboard

In one year, India has progressed very rapidly, and the future, barring unfortunate internal problems, appears optimistic Individually, studios are attempting to better their standards but collectively, the state of "Dog eat Dog pretty generally exists It is often the practice of more powerful companies to rush to completion the same picture a competitor may be producing, and under the present Indian law, there seems no protection available Inter-company rivalry is far too bitter to make a producer's organization possible

A sound truck in India

During my last few weeks in India, while temporarily acting as editor of India's film weekly, "Varieties," I formulated the plan and assisted in organizing the Calcutta Branch of a technician's society, modeled on the SMPE Under the name of The Society of Indian Film Technicians, this organization shows promise of becoming a national power and it is hoped will do much toward building and regulating the industry There is a great necessity for breaking down the barriers of individual jealousy among representative technicians, and such a society will go far in aiding all involved

There is a great need and demand for technical books and magazines dealing with the film industry in all of its branches I can confidently report that THE AMERICAN CINEMATOGRAPHER as a magazine, is the ONLY such periodical accepted in the Indian studio, and each copy is a treasure jealously passed among the favored friends of the subscriber The 1930 CINEMATOGRAPHIC ANNUAL has been since its publication India's FILM BIBLE, and is everywhere accepted as the final authority All technicians are eagerly awaiting Volume 2, the new 1931 edition

In conclusion a few words regarding the people with whom I have worked and the country

London edited news articles would paint a picture of Hindu and Mohammedan at each other's throats with Parsi and Sikk dipping their hands in the blood of both Brahmin and Untouchable, hard at it in the other corner

(Continued on page 31)

Progress

by **JOHN ARNOLD**

President American Society of Cinematographers

THE statement is frequently made, of late, that the progress of cinematography has far outstripped that of the other artistic and technical phases of motion pictures This statement is not made alone by technical or semi-technical writers, but by the writers of the lay press Coming from such a source, and at a time when all of the other phases of film-making are admittedly reaching such high levels of perfection, this is a compliment of which every member of the camera profession may well be proud

It is a source of great gratification to this writer that the American Society of Cinematographers and its individual members have been able to do so much in bringing about this progress Cinematography itself is unique in that it is both an art and a science and cinematographers are likewise unique in that they are at once artists, technicians, and researchers For they not only utilize the developments which constantly emerge from the laboratories of the film and equipment manufacturers (laboratories which are, incidentally, in many cases directed by A S C members), but they carry on a greater or lesser degree of independent practical research themselves This experimentation often entails considerable expenditures of money, time, and labor These expenditures are willingly made by the various cinematographers concerned, despite the pressure of their work, and the prevailing world-wide depression I do not know of a single cinematographer who does not constantly carry out such research, not only when he is employed, but between pictures Many of them maintain considerable equipment solely for this purpose, some of them even have complete miniature studios and laboratories

In addition, the American Society of Cinematographers, through its various research, educational and production committees, as well as through special committees and through collective experiments by the membership as a whole, is constantly engaged in research on the various practical problems affecting cinematography Not only does it experiment with new materials and equipment, but it constantly strives toward the general betterment of the industry.

During the past half-decade, there have been innumerable examples of this Some of them have received international publicity, others have been known to only those directly affected One of the Society's earliest achievements was in connection with the introduction of panchromatic film and incandescent lighting It was, it will be recalled, an A S C member, Ned van Buren, who first dared to photograph an important production entirely upon the then new and untried panchromatic film Following this came many individual and collective experiments which resulted in the universal adoption of that type of emulsion Not long after, it was again the A S C which pioneered the use of incandescent illumination, both individually, and in the famous Mazda Marathon which was conducted by the A S C with the cooperation of Warner Brothers Studios and the Academy of Motion Picture Arts and Sciences As a result, practically every studio is today on a 100 per cent incandescent basis

Again, with the introduction of sound, it was again A S C men who photographed the first talking pictures, and A S C members, especially Douglas Shearer and Roy Pomeroy, who made outstanding contributions to the new science of sound-film recording It was, too, largely through the individual and collective efforts of the Society and its members that the camera regained its mobility, which had been lost through the use of booths And the contributions of other members to the development of practical portable recording outfits is too well known to need repetition

The research conducted by the Society during the short-lived wide-film craze, though less publicized, was no less exhaustive and valuable, as it was practically the sole complete, industry-wide survey of the problem ever made When and if the wide film idea is revived, as it undoubtedly will be, the work of that committee will undoubtedly furnish a basis for the industry's final action on the problem

More recently, the Society's experiments with the new super panchromatic emulsions generically termed 'Fast Film," hastened the industry's complete adoption of these films, and are too well known to need detailed repetition

Since then, the Society's study of the problem of obtaining better quality in release-prints, though it is even yet far from complete, has materially bettered the industry's release-prints, and awakened the producers, distributors and exhibitors of the country to the vital need of better and more uniform release-prints

Most recently, the society's consideration of the grave economic crisis confronting the industry today, as embodied in this writer's recent message to the industry, has aided in bringing about a more thoughtful and disinterested consideration of the problem by all concerned.

But these things tell only half of the story They do not begin to cover the vast deal of patient individual research and experimentation conducted by individual cinematographers This work, though unheralded, extends to every phase of cinematography Despite the fact that it is so little known, it has been the foundation for much of the astounding progress of cinematography It has touched the artistic and the technical sides of camerawork, and ranged from the intricate problems of lens and camera design and trick cinematography to simpler questions of lighting filtering and even camera-maintenance

The results, however, are vividly apparent upon the screens of countless theatres Practically every picture released contains action which could not have been photographed even a short two years ago Two outstanding examples of this come to mind "Hell Divers" and "Strangers in Love" Neither of these productions could have been made in its present form even a year ago Today, we accept them without question, and without thought for the achievements of the cinematographers whose researches into process photography made them possible

But, great as it is, the progress made thus far in the art and technique of cinematography is but a small thing compared with what is to come Cinematography is going to outstrip even its previous amazing progress; and the American Society of Cinematographers and its individual members will inevitably be in the forefront of this development We have done much already, and established glorious traditions, but we are bound now not only to live up to these traditions, but to establish newer and more glorious ones

Costuming and Cinematography

by **GUY S. DUTY**
Chief Costume-designer Fox Studio

IT MAY perhaps seem trite to repeat that the motion picture is primarily a visual art; but the fact remains that such is the case Since the cinema is then essentially visual, it follows that it offers unbounded opportunities to cinematographer, set-designer and costumer In return, it demands the most complete cooperation between these three artists—a cooperation which is, unfortunately, all too frequently lacking And until this cooperation not only comes into being, but becomes a thoroughly established routine—a rule rather than an exception—the visual side of the cinema cannot become the complete artistic unity that it can and should be

Under the present system, the sets are designed quite independently of the costumes, and the cinematographer is expected to come on the set unprepared and photograph the two so that they are artistically and dramatically satisfactory Considered individually, the sets are as a rule satisfactory, and so are the costumes but they are all too often unsatisfactory in combination That the results on the screen are as good as they are is a lasting tribute to the artistry and technical skill of the cinematographers. It reflects little credit upon those of us whose duty it is to supply them with sets and costumes which are not only artistic individually, but thoroughly photogenic in combination

Right, design by Mr. Duty for costume to be worn by Jean Bennett in "Widow's Might." At left the costume as worn by Miss Bennett

Undoubtedly much of the blame for this situation lies with the present methods of production Studio overhead has reached an appalling figure, and pictures are accordingly pushed through production in the shortest time possible, and to meet the demands of an inexorable release-date What time is spent in preparation is devoted largely to the story and dialog, while the physical features— particularly sets, costumes and cinematography—are slighted, often to the point where sets and costumes must be provided literally over night This gives the architects and costumers little or no time to coordinate their work, and to consult with the cinematographer Let it be said, however, that the cinematographers are always eager to cooperate, but when a cinematographer is working day and night to complete one production, and the sets and costumes for the next one have just been ordered and must be ready for use the following morning, the opportunity for such cooperation is small indeed

The ideal state of affairs would be one which allowed more ample time for thorough coordination of set and costume design for the purpose of securing combinations that were ideal photographically and dramatically It is well known, of course, that the lighting and composition of each scene must coordinate perfectly with the dramatic mood of the action; the same is true of the costumes and sets They, too, must perfectly fit the action It is also well known that the visual mood of the photography can heighten the dramatic mood of a scene, and subtly prepare the audience for the action which is to follow So, too, can the sets and costumes They can be made to match the mood of any scene, and to aid the cameraman in his efforts to lay a visual foundation that will make the audience psychologically receptive to the action But to do this, they must be perfectly matched to each other, both visually and photographically, and to the technique of the individual cameraman, as well Were this done, all three artists would be working to better advantage, for they would be working hand in hand, toward a common goal, with a thorough understanding of both the problem in hand, and the methods to be used in its solution

Unfortunately, however, the costumer and set-designer get little opportunity to coordinate their ideas Each reads the script, and visualizes his individual contribution to each scene, then each proceeds to design and fabricate that contribution independently of the other So we all too frequently get dark costumes to be used on a dark set, and light costumes to be used on a light set, in either case, the sets and costumes are thoroughly satisfactory conceptions individually, but when brought together they place unfair handicaps on the cinematographer, for such combinations do not afford natural tonal contrasts, and force the cameraman to secure his separation of planes and depth entirely by lighting And when, as is frequently the case, the director has a penchant for playing his action close to the walls of the set, the cinematographer is faced with utterly impossible problems

Linda Watkins wearing the costume shown in design at lower left

Costume design made by Mr. Duty for use by Linda Watkins in "Good Sport"

This situation is a bad one, obviously In the first place, anything that places the cinematographer at a disadvantage is harmful to the production as a whole Clearly, adding to the difficulty of lighting a scene adds to the time and money that must be expended in photographing the picture But it strikes closer home than that, for if costumes and sets do not make a perfect photographic combination, neither can be shown to its best advantage Therefore, to do justice to themselves, as well as to those splendid fellows, the cameramen, we who design the costumes and sets should make greater efforts toward coordinating our work And as a matter of common business efficiency, production should be so scheduled as to allow more ample time for this cooperation, not only between architect and costumer, but between both of these and the cinematographer, for none of the three can do his best work alone, without a thorough understanding of what the others propose to do

Considered for itself alone, motion picture costuming offers the designer far greater opportunities for expression than does any other field He has everything in the world to work with, and his accomplishment need be limited only by his ability and imagination Within a very short period, his designs may range from current styles to period models of any moment from antiquity to the remote future The sole restraint imposed upon him is that his work never become stylized. Here, cinema costuming differs most vitally from ordinary fashion-creating. for in the latter case, it is desirable that a designer's creations be recognizable as his, while in pictures the designs must express the individuality of the star, and the mood of the story rather than the individuality of the creator.

(Continued on page 30)

A New Zoom Lens

One of the outstanding features in the camera field during the past month is the announcement by Otto Durholz of Paterson, New Jersey, of a new lens which, according to Mr Durholz, performs in a spectacular manner The following description of the lens with an outline of its possibilities has been prepared by Mr Durholz —Editor's Note

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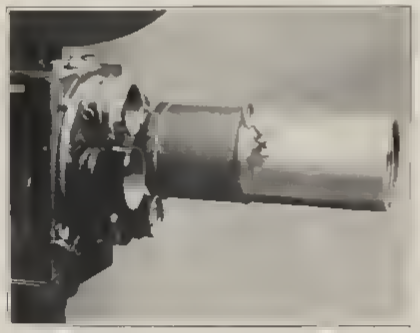
//THE ARTISTIC and economic advantages of a lens to permit, at will, a variation in image size during takes, has long been recognized The directorial value of truck dolly or approach shots in which a gradual transition is made from long shot to close-up or vice versa is such that despite all the additional expense of track sections, trucks, added crew and time lost by extra rehearsals and retakes, the use of this technique has grown to such an extent that there is more than ever a need for a more efficient alternative Sound productions require a safer procedure unless these shots are taken wild without sound Even in sound-news work where cumbersome apparatus is not to be thought of, it is of obviously great advantage to vary camera angles without interruption of the sound track, not to mention facilitating set-up for grab shots under pressure It may seem strange that while camera cranes, tier stackers and the like were acquired to permit such shots from other directions than the horizontal, so little was done in perfecting a simple optical solution of the problem



The new Zoom Lens

Unfortunately the problem is not one of which a simple optical solution can be readily found if it shall also be feasible mechanically A small fortune has been spent and a number of ingenious contrivances built in attempting to effect the required automatic control of the optical systems There were simple solutions that were inaccurate or unworkable and there were workably accurate ones which were anything but simple

"All of the essentials of a successful device of this nature do not occur at first thought Obviously the subject selected must be maintained in maximum focal sharpness on the film during the entire range of the movement Customary close-ups made with a four inch lens with camera moved up from wide angle position would suggest a variation of about 4x, say from 40 to 160 mm The lens should accordingly be focusable as close as 8 ft in order to take a full head close-up, it being understood that initial focussing will not cause loss of focus anywhere during the travel There must be provision for equalization of effective aperture or a partial fade-out will result Color and distortion errors must be corrected to compare favorably with single purpose lenses, insofar as the present state of optics permits

"It is vital that, due to the nature of the optical systems involved, full sunshading be provided at every stage despite the constantly changing angle of view. To give the effect of a smooth approach without the intrusion of the mechanical, irregularities must be eliminated. This requires that the image increase correctly from start to finish, without the cameraman having to change rate of control to make this correction Not only must the image increase, but the rate must itself increase in accordance with the laws of perspective

"Mechanically it is essential to save time by the use of the device or its purpose will be defeated It should be light, rigid, compact and of few, simple, working parts, preferably metal To attach it to a camera accurately and securely should not take longer than changing an ordinary lens, and it should fit on camera or turret without the use of tools and without interfering with other lenses Its drive should permit rapid or prolonged "zooming" and be accessible to operator of camera Auxiliary tripod parts or counterbalancing of friction heads are not desirable

"Combining the cameraman's point of view with an original scientific study of the basis, my lens has been developed to meet these requirements, and after a year's experience with my own, I am supervising production for the market. Avoiding corrective additions to related mechanisms, a fundamentally new design of striking characteristics has resulted, far different from any apparatus built or patented previously In fact, although carried about in the Durholz "bag of tricks" on location and news assignments, its resemblance to a telephoto lens served to maintain secrecy without any other disguise.

"This lens snaps over the standard Mitchell type cup mount in a few seconds ready to focus This may be accomplished by ground glass or scale and from infinity to 3 ft as simply as with an ordinary lens No kit of supplementary lenses is needed Other lenses need not be stripped from the turret Being under 5 lbs in weight and less than 11 inches long, it is easily carried about and requires no auxiliary tripod parts nor counterbalancing of friction head

"From long shot to close-up it maintains focus automatically from 40 to 160 mm or reverse, in any direction and in any desired footage from 2 ft upward For prolonged shifting a crank is provided which slips on the camera sunshade arm The range is sufficient to begin with a crowd shot of 16 heads and close in on one head, full-screen With new sound aperture the range may be further extended down to 37 mm as shown provisionally in illustration The effective aperture is F 8 at full range F 5.6 at 3x, increasing as range is limited An automatic limit to range is provided if iris is opened wider than F 8

"The rate of image increase is optically corrected without need of changing lever or cranking rate Practically maximum sun-shading at all focal lengths is automatically provided

"While the first lens was being given practical tests to discover possible refinements in the lens itself, the process of manufacture was being perfected to reduce the necessarily great expense involved in the manufacture of the one Other methods of producing the control mechanism having been rejected on account of the human equation a specially designed focus generating machine was built, thus producing the same accuracy inherent in a lathe or compass for generating circular shapes The job, however, was far more intricate than producing a true circle Beside having to cut a working surface that would not need further treatment by hand, the machine

(Continued on page 37)

The Reversible Process

by **DR. W. RAHTS** and **DR. F. O. SCHULZ**

Translated by Dr Herbert Meyer
Technical Division of Agfa Raw Film Corporation, Hollywood, California

THE reversible process, as known, involves a method, whereby a positive is obtained on the same film that has been used in making the negative To this end, the film or plate, after being exposed, is first developed in a developer of a special composition, after which the silver grains are dissolved in an acid bleaching bath, containing potassium bichromate, potassium permanganate, or chemicals of similar reaction, and the remaining silver bromide is finally reblackened, either by using a second strong exposure and subsequent development or by directly changing the silver bromide into silver sulphide

To obtain perfectly clear high lights, a clearing bath is usually applied immediately following the bleaching, which destroys and discolors all traces of the bleaching solution left in the gelatine layer Thorough washing and rinsing between each operation during the whole process is essential to obtain perfect results

The first actual and widely used application of this reversible process was made with the so-called color screen plate It is not possible to successfully superimpose, one over the other, all particles of the same color in a contact printing process due to the irregular distribution of the color grains in the screen of this type of plate

The consequent result would be that, in printing a color plate negative onto another color plate, the true color rendition would be falsified, due to a decrease in transparency By use of the reversible process this effect is entirely eliminated A further practical application of the reversible process covers the field of amateur movie photography

The characteristics, which make an emulsion suitable for the reversible process, are given as follows:

(1) The grain must be reduced to a minimum since the projected film is looked at from a far shorter distance than usually maintained in 35 mm. theatre projection,

(2) A suitable gradation covering all requirements for good projection quality;

(3) High speed, since the exposure in the camera is limited to approximately 1/35 of a second, and furthermore since large apertures cannot be used in cases where depth of focus is desirable

The grain in a print, as is known, is mainly attributable to the fact that the relatively large grains of the negative are printed onto the positive film and thus made visible in the projected print

Within wide limits, it may be found correct that the speed of the singular silver haloid grains of a given emulsion will be in proportion to their size That is, that the larger grains are more sensitive to light than the smaller ones Considering this latter point in its practical importance for the reversible process, we may find the following interesting fact

In all places, where light strikes the film during the exposure, the high and medium sensitive grains will be affected first, and correspondingly blackened in the first developer, and then dissolved in the bleaching bath Therefore, only the remaining smaller grains are left, which after the second exposure are redeveloped and thus form the positive picture This means in the reversible process, that only the smallest grains are left in the high lights and the light shadows, where the human eye is especially sensitive to grain

In the deeper shadows only a part of the large grains are exposed and removed by the bleaching process Therefore, the final positive in these parts will be composed of the remaining large, medium, and small sized grains These grains, however, although rather large, do not affect the quality of the picture, since the eye is not able to discern the details in the deeper shadows to the same extent that it does in the lighter shaded tones

In the negative-positive process, the large silver bromide grains will be affected in all parts during the exposure and are developed afterwards; these large grains are then printed in all shades onto the positive film Therefore, comparing both methods of obtaining a positive picture, the reversible process will give preferred grain quality.

From the foregoing, it will be understood that the reversible emulsion should contain a quantity of sufficiently large grains to fulfill the requirement for high speed and also a sufficient quantity of small grains for the structure of the final positive

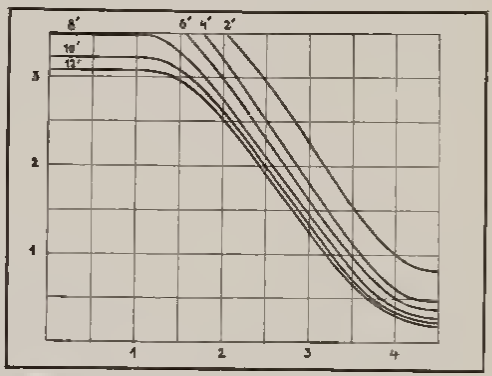


Fig 1. Agfa reversible film (developed into a positive), Different developing times for first developer without addition of silver bromide dissolvents

An extremely high sensitive emulsion consisting only of large grains will result in weak and flat reversed positives, since there is an absence of sufficiently small grains On the other hand, a fine grain emulsion like positive film will show good picture quality after reversing but is not sufficiently sensitive

The resolving power of an emulsion apparently does not become changed to any considerable extent by carrying the film through the reversible process, considering that only the grains actually present during the exposure determine the characteristic of the resolving quality, and it is, therefore, of no importance whether the film is afterwards processed to a negative or to a positive

Figure 1 gives the sensitometric characteristics of the reversible emulsion developed into a positive As usual, the log values of exposure on the horizontal axis are plotted against the densities of the vertical axis.

The characteristic curves of negative emulsions rise from left to right, that is, the densities in general increase with increasing values of exposure, while the curves for reversible emulsions are in inverse ratio, the densities decreasing with increasing values of exposure.

(Continued on page 22)

HAL HALL

says

Advice

OF LATE this writer's desk has been swamped with letters from scores of ambitious men who hope to come to Hollywood and "break into" the motion picture industry in various departments To all we have given the same answer, and we feel that we should say a word on this page about it

At the present time the motion picture industry is like most other industries, in the midst of a rather serious situation The depression has hit the picture business perhaps a bit harder than it has hit many other activities The result is that there are countless men and women out of work in Hollywood What chance would a stranger with no experience have under the circumstances? It is a difficult enough task in good times to break into the picture field But in these times when men with years of picture making experience are unemployed and are willing to take any kind of a job to keep the wolf from the door, the inexperienced stranger has no chance.. Coming to Hollywood now with the hope of getting employment in the picture studios will result in nothing but heartaches If you have a job of any kind, stay where you are for jobs are more precious than diamonds right now Don't come to Hollywood and find yourself unable to even return home This writer's ice man is a college graduate who came here hoping to crash the studio gates And there are a lot of other college graduates here who would be happy to have an ice wagon route

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The Amateur Contest

IT IS really gratifying to see the large number of Amateurs who are entering pictures in the $1000 00 Amateur Movie Contest which this magazine is now conducting From all corners of the Globe the entries are coming in, and it looks now as though next November will see the greatest collection of Amateur films ever brought together when the judges assemble to award the prizes in this contest

On another page of this magazine there is an announcement of two more additional equipment prizes to be given winners in the contest One is a Model k Cine Kodak listed at $150 00, and offered by the Eastman Kodak Company Another is a complete Max Factor Make-up Kit, containing everything in the way of make-up that an individual or a club might need Last month we announced two prizes which will be given by the Bell & Howell Company They were, first—the choice of a Filmo 70DA Camera, listed at $280 00 or a Filmo Model J L Projector, listed at $298 00, second—a choice of any standard Cooke Telephoto Lens, ranging in price from $60 00 to $95 00 This makes quite a group of valuable prizes, added to the total of $1000 00 in cash prizes to be given by this magazine From month to month other additional prizes will be announced, which should make this contest something really worth "shooting for" Only eight more months remain to get in this contest, and we advise all Amateurs to hurry their entries, and not wait until it is too late to make your picture

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Tell Us

WE OF the magazine wish to be as helpful as possible to our readers We try from month to month to give you articles that will be both interesting and of value Letters from our readers seem to indicate that we are giving them what they want But we would greatly appreciate more letters telling us just what you would like to see in our pages If you have problems, write to us and we will attempt to solve them If you would like to have certain articles, write us and we will do our best to give them to you In other words this magazine belongs to our readers—it is your privilege to tell us what you would like to have placed therein Let us hear from you Send in your suggestions today

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What! Another Slam!

PITY the poor film industry It is a wonder that it continues to exist, under the constant bombardment by every nincompoop who wishes to call attention to himself

And now we find even a United States Senator taking a shot at the film industry at a time when all United States Senators would be doing their country a REAL service by trying to solve the ailments of the country that are throwing hundreds of thousands of men into the unemployed ranks, with the resulting suffering on the part of countless women and children Senator Brookhart shouts in bull-like tones in the halls of the sedate Senate that we should have an investigation of the film industry Why? Perhaps Mr Brookhart knows—but we doubt it

What the motion picture industry needs more than anything else is to be left alone and to be given an opportunity to work out its own problems as it has always done in the past If the esteemed gentlemen who are in the Congressional and Senatorial Halls will work as industriously to balance the nation's budget as the motion picture executives are working to put the industry back on its financial feet the country will get along quite well

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This and That

AMONG the Hollywood visitors as we go to press are President J A McNabb of the Bell & Howell Company and Ted Curtis of the Eastman Kodak Company at Rochester . . Our good friend Eddie Blackburn is one of those whose birthday comes but once every four years—being born on February 29—Congratulations Studios are maintaining more policemen on their lots than it would take to police a good sized city—can't figure just what it is all about, for you can't carry away the heavy equipment used these days . . Some studios are feeling that a gentleman from the press will not contaminate the lot if he is allowed thereon . . Studio gatemen are still wearing that "superior air" . . Ever notice that it is easier to talk to most big executives than it is to see their secretaries? . . Pictures seem to be getting better . . . . Box offices will be busier as a result . . . Wonder why that wasn't thought of long ago? Suggestions for material for Volume 3, Cinematographic Annual, will be greatly appreciated by Ye Editor Weather very "unusual" in California this winter Advertisers are discovering that they get results when they use this magazine . . It reaches thirty-six foreign countries and is read all over these United States . . Yes, Sir . . Intelligent advertising right now will help break the depression

Shadows

Frank Tannar

Charles C Clarke, A S C

Arizona Desert

Charles G. Clarke, A. S. C.

Helm Harry Adams

The Reversible Process

(Continued from page 17)

The brilliancy is not only dependent upon clear high lights but also upon the density of the deepest shadows In the reversible process no silver is removed at those places which have not been exposed to light, and, therefore, the full amount of silver bromide will be developed in the second developer following the second exposure The maximum density of the reversed image is mainly dependent upon the thickness of the emulsion layer and upon the content of silver bromide in the emulsion

If one would use the normal formula for the first development, the maximum density of the reversed image would not be influenced by the developing process itself However it is not possible to add to the first developer chemicals which will dissolve silver bromide as for instance ammonia, hypo, a o These chemicals dissolve parts of the silver bromide during the first development The longer the first developer is applied the more silver bromide will be dissolved, and the value of the maximum density of the reversed image will be correspondingly decreased

Figure 1 shows sensitometric curves of reversed film, using a normal formula for the first developer not containing any chemicals which dissolve silver bromide, while figure 2 shows similar curves of the same emulsion, using the same formula for the first development but with chemicals added to dissolve the silver bromide It may be seen from the comparison of both figures that the dissolving agent mainly decreases the density of the shadows, while the high lights are only slightly weakened

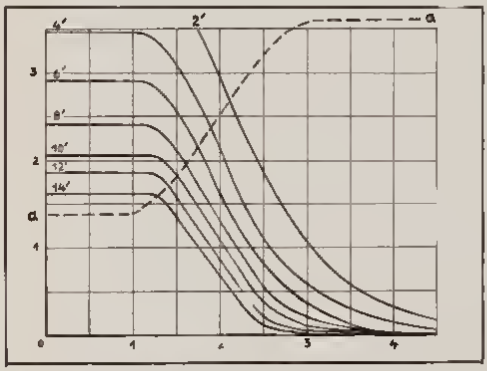

Fig 2 Agfa reversible film (developed into a positive) Different developing times for first developer with addition of silver bromide dissolvents A-a negative curve developed for eight minutes in first developer and fixed afterwards

The developing time with silver bromide dissolvents is decidedly shorter for obtaining the same maximum density The application of this method makes it possible to reverse emulsions even of a pronounced thickness, and furthermore, as shown in figure 2, to obtain greater tolerance and latitude in the arrangement of the gradation of curves It is regrettable, however- that it is not possible to make similar negative curves, which would allow the direct observation of the action of the first developer containing silver bromide dissolvents, since the dissolved silver bromide becomes partly reduced, and silver in extremely dispersed form precipitates causing dichroitic fog, thus practically preventing the correct reading of the curves The curve a-a in figure 2 represents approximately a negative curve, which would be obtained by developing the reversible film for eight minutes in a first developer adding silver bromide dissolvents and fixing out immediately afterwards

At this point it has to be mentioned that it is not possible to determine the sensitometric curve of the reversed film by any geometrical construction figured from the negative curve As shown above, the reversed positive consists of entirely different grains than the negative picture Since the shape of a curve is determined by the nature and distribution of the grains the structure of both, the negative and reversible positive curve, must widely differ If using daylight, instead of artificial light, for the second exposure, one will obtain pictures which are somewhat darker more flat, and of brownish color for the reason that the more intensive daylight affects the smallest grains also, which otherwise would not be developed and, therefore, dissolved in the final fixing bath

The ideal value for the maximum density naturally is dependent upon the intensity of the light source in the projector used Considering the present types of 16 mm projectors, a maximum density of 2.3 to 2.6 should prove satisfactory

To obtain an exact natural reproduction, the gamma value of the reversed curve theoretically would have to equal unit, because this gamma in this process is replacing the product of gamma negative times gamma positive This would indicate that, taking into consideration a fog value of 0.1 and assuming a maximum density of 2.3, the latitude would cover a range of 2.2 logarithmetically or 1 : 160 numerically However, it is known that in amateur photography an exact natural reproduction is not desired, but a considerably more brilliant one, and therefore, all reversible emulsions show a decidedly higher gamma value and correspondingly less latitude

The ideal rendition of shadows and lights requires a perfectly straight line characteristic for the reversed emulsion, since there is no possibility for compensating the different curvatures of a negative and a positive curve against each other Unfortunately, this requirement is not taken care of in the present types of reversible emulsions

An important question is that of the speed of the reversible emulsion In considering the gradation curve, the speed has to be determined by the value of the log exposure axis, the corresponding density value of which shows a density just clearly distinguishable from the value of the maximum density

It is comparatively simple to obtain good picture quality using reversible film with correct exposure, and an object, which does not contain too large a difference between lights and shadows The difficulties start with the problem of adapting the reversible method to largely differing light ranges in an object and by trying to correct over- and under-exposure

From figure 2, one will notice that by keeping the conditions for reversing constant, a possibility for adaptation in the above sense cannot be expected The high lights, for instance, have to be clear Therefore, the highest light value has to be placed by exposure to the point where the curve turns parallel to the log exposure axis in the lower right Since this is a given condition, it will be evident that the latitude for exposure range is decidedly limited

(To be continued next month)

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New Officers for Cinema Club of San Francisco

THE FOLLOWING officers have been elected by the Cinema Club of San Francisco President, Fred W Kolb, Vice-president, Gordon Michie, Secretary-treasurer, Harold McKay, Chairman of Membership Committee, Fred Dohrmann, Jr., Chairman of Program Committee, H P Westler

The Club has recently opened new quarters at 447 Sutter Street The following club sections have been formed Dramatic, 9½ millimeter, Scientific, Technical, Primary and Advanced

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EASTMAN *SUPER-SENSITIVE*

Panchromatic Negative (*Gray-backed*)

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

THIS past month has seen the release of a group of the most magnificently photographed productions ever screened Each of them represents cinematography in its highest development, and gives indisputable evidence that cinematography has taken its place as one of the great art mediums of the world Each represents a radically different style of camerawork, but they are so nearly equal in quality that it is all but impossible to name any one of them the best of the month

"ARROWSMITH"

◆ But since one of them must be chosen as the best, that one should be "Arrowsmith," which was photographed by Ray June, A S C , for it is one of the most sincerely and intelligently photographed films of all time No cinematographer has ever achieved a more valid and sustained mood than has June in his interpretation of the famous Sinclair Lewis story Without being for a moment obvious, the cinematography tells the story of Martin Arrowsmith's career, following his development from crudity through ambition, futile striving, to partial success and disillusionment and finally a renewed impetus to carry on and conquer There are broad and crude tones, sparkling contrasts, sombre lower-keys, hectic higher-keys, delicate etchings, vaporous murkiness, and finally the clear-cut lines of renewed vigor

"Arrowsmith" is, in a word, a picture which every cinematographer and every student of the art of cinematography should study earnestly It is both an education and an inspiration—the epitome of the cinematographic art

"MATI HARI"

◆ Scarcely less perfect is 'Mata Hari," photographed by William Daniels It is, perhaps, even more educative, for in it Daniels has employed practically every artistic and technical trick known to cinematographers Every student—professional or amateur alike—of lighting, composition, cinematics, and cinematography generally, will find a vast deal of benefit in studying "Mata Hari " The amateurs especially, will find one scene which is played entirely by the voices and cigarette-glow of Greta Garbo and Ramon Novarro interesting, as it shows the potentialities of super-speed film

"THE BROKEN LULLABY"

◆ This film was originally titled "The Man I Killed," and in it, Victor Milner, A.S.C , has achieved the most distinctive photography of many months He has united the widely differing German and American schools of cinematography with a most remarkable result He has almost completely dispensed with backlighting, which is so greatly abused in this country, yet has achieved unusually fine modelling The keynote of the picture is utter naturalness, yet he has succeeded in maintaining the properly low-keyed mood necessitated by the heavy drama of the story In a few sequences he has used effect lightings to great advantage without any trace of the obvious

"AFTER TOMORROW"

◆ Although devoid of spectacular settings and costumes, "After Tomorrow" is a notable piece of cinematography Story, direction and characterizations all lend themselves ideally to James Wong Howe's style of cinematography He has matched the mood of each scene to his photographic quality with rare perfection, and at the same time photographed the players to far better advantage than most of them have previously been treated The picture does not offer opportunities for the cinematic grandstand play that so often passes for good camerawork, and Howe's camerawork, because of its perfection, is unobtrusive, and yields the spotlight to story and characterization None the less, it is the photography which psychologically prepares the audience to receive the excellent acting The scene where William Collier's wife returns to him is notable in this, for the slightly harder visual quality, and the shadow-patterns thrown on the set and upon Collier's face unconsciously prepare the audience for what is to follow

There is but one major criticism which can be made this is of a process scene of Charles Farrell and Marian Nixon riding on a bus-top This scene is an important one, and although Howe s lighting of the foreground action is perfect, the scene suffers from a very poorly photographed background plate This background plate is very badly out of focus, and unsteady, as well It is, of course, unnatural to expect such background action to be wiry-sharp, but it is worse to have it so obviously made out of focus as this Such process backgrounds should be photographed with normal sharpness, to allow the cinematographer who completes the shot to use whatever type and degree of diffusion may be necessary in order to complete the composite scene perfectly

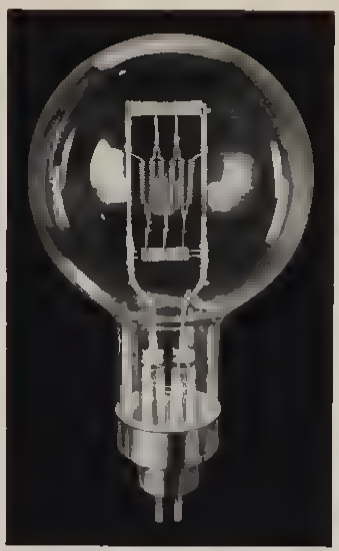
"STEADY COMPANY"

◆ Since returning to this country, Charles Stumar, A S C , has not had many opportunities for spectacular cinematic distinction; but his work in "Steady Company" is so fine as to remind us that in Germany his name was often billed above star or director, The picture itself is an unpretentious little program film, and was made, I believe, on a schedule and budget that should class it as a "quickie", but Stumar's photography, aided by a very human story and sincere portrayals makes it a very worth-while picture Stumar has photographed the production with a quality that is too frequently missing from specials now-days His handling of the prize-fight sequences is especially noteworthy, particularly in the dramatic application of camera-angles Stumar has been assigned the completion of "Mountains In Flame", in his hands it should become a great picture

"THE GAY CABALLERO"

◆ Here is another picture that is saved by its photography This is getting to be a habit with George Schneidermann, A S C In this one, working under the handicaps of bad weather, changes of director, a lackadaisical cast, and the generally disordered conditions recently prevailing on the Fox lot, Schneidermann has turned out a picture which is, photographically at least, always excellent, and at times rather better than that. Despite the bad weather, which necessitated the use of "booster" lights, he has done his best work in the exteriors The interior sequences would have benefited greatly had he been able to employ more pictorial set-lightings, for the sets were of the Spanish type, and would have lent themselves well to such treatment The exterior sequences, and particularly the night scenes, would have benefited, too, by the use of tinted-base film

MAZDA LAMPS



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6 aut of 10 were taken exclusively with MAZDA lamps, all of the balance were taken partially with MAZDA lamps

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1. CIMARRON	PART MAZDA LAMPS
2. STRLET SCENE	100% MAZDA LAMPS
3. SKIPPY	PART MAZDA LAMPS
4 BAD GIRL	PART MAZDA LAMPS
5. MIN AND BILL	100% MAZDA LAMPS
6. THE FRONT PAGE	100% MAZDA LAMPS
7 FIVE STAR FINAL	100% MAZDA LAMPS
8. CITY LIGHTS	PART MAZDA LAMPS
9. A FREE SOUL	100% MAZDA LAMPS
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..In the Realm of Sound..

New 16 mm. Sound-on-Film Reproducer

ANOTHER 16 millimeter sound-on-film reproducer for the amateur is to be announced shortly by the Ashcraft Sound System Company of Hollywood, according to very authentic reports This new reproducer will make use of the regular 16 millimeter film, retaining both sets of sprocket holes, and is, indeed, a veritable "miniature standard sound" film since the same relation between sound track and picture has been maintained on the 16 millimeter as it is on the standard Both picture and sound track are reduced in size to forty per cent of the standard Thus the sound track is 40 mills wide instead of the usual 100

The projector is one of the better types now on the market and permits the projection of a picture of 9 by 12 feet The entire outfit will operate on either 50 or 60 cycle Alternating Current The perfection of a compact new type of photo-cell which within itself performs all of the functions of the conventional reproduction system, it is said enables the Ashcraft reproducer to render efficient service even in the hands of the most inexperienced projector owner.

Not the least important feature of this system is the provision for the direct reduction of 35 millimeter sound film to 16 millimeter This will make instantly available the vast collection of 35 millimeter film recorded in the past few years

Simplicity is the keynote of these devices which are the result of intensive research on the part of Ernest G Ashcraft who has devoted many months toward the perfection of this 16 millimeter recording, reducing and reproduction system Associated with Ashcraft in this project is E. B. Taylor who has been identified with the 16 millimeter industry for a number of years Mr Ashcraft has worked relentlessly to perfect a system which would maintain standards already set and to continue on in 16 millimeter film the standards as formulated in studio practice

◆

E. H. Hansen Heads New Engineering Laboratory

THE MOTION picture industry recently welcomed a new arrival into the field The E H Hansen Laboratories have been formed to give the independent producer sound engineering service and to create new answers to the need for specialized equipment used in the production of talking pictures

E H Hansen who heads the organization was one of the developers of the Movietone system now used by Fox and for five years was the Chief Recording Engineer for that organization Previously Hansen was Consulting Engineer to the R C A on photoelectric problems for a period of two years, and the New York World for three years

Two new devices are being introduced to the industry A speed control especially adaptable to the D C interlock motor, and a new system of variable area recording having no unmodulated exposure, inherently noiseless, and capable of sixty DB on the film

◆

New Portable Projector

A PORTABLE sound-on film projector embracing several new and novel features for an equipment of this type has been announced by the James L Carlton Laboratories of Elmhurst, L I The device will be marketed immediately

Adjustable Volume Fan Marketed By Vallen

MARKETING of an adjustable volume ventilating fan, as an addition to the regular line of special purpose electrically operated equipment now manufactured by the company, has been announced by the Vallen Electrical Co Inc , of Akron, Ohio

The device, which is said to have been specially designed for duct installations, consists of a motor mounted outside the duct away from deteriorating and harmful elements The fan shaft is at right angles to the motor driving shaft, with power transmitted through specially constructed gears which provide a positive drive All shafts are carried on ball bearings

One of the most unusual features of the fan is its adjustable pitch blades The pitch of the blades, it is declared, can be adjusted to exactly meet the needs of the installation whether exhaust air, hot or cold, steam, fumes, spray, smoke, dust, odors, etc Thus by blade adjustment the specific or weight of various elements can be compensated

Fan blades were designed especially for this purpose by a well-known aviation engineer and their unusual design provide the unit with efficiencies and volume capacities that reflect the influence of the swiftness of the airplane the company declares

◆

New Company Succeeds Dworsky Machine Corp.

A NEW ORGANIZATION to succeed the Dworsky Film Machine Corp and which will carry on under the name of the Film Processing Machinery Corp , with headquarters at 354 West 44th Street, New York, has been announced by John Manheimer, representative of the newly formed company It will operate under the Dworsky patents Announcement is also made that Sam Dworsky, associated with the former company since its inception, will continue with the Film Processing Machinery Co , in charge of factory operations, design and equipment, with headquarters at 5-15 48th Ave , Long Island City

Products manufactured and offered by the company include film buffers, renovators, rewinders, film cleaning fluids and film and projection room accessories

◆

New Projection Organization Established in New Orleans

THE INTERNATIONAL ASSOCIATION of Projectionists and Sound Engineers of North America was recently incorporated in Louisiana, with headquarters in New Orleans

The officers are John Tessero, international president, M. E Clark, excutive vice president, J R Jordan, international business agent A Booksh, general secretary-treasurer

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Conducted by **EMERY HUSE, A. S. C.**

Principles of Sensitometry and Their Practical Application

Part 11

UP TO THIS point sensitometers have been discussed somewhat generally. All the instruments described are more or less research instruments, there being usually only one instrument of each type available. During the past year there has been made available to the motion picture trade a sensitometer of the non-intermittent time scale type for use in laboratory control work. This instrument is manufactured by the Eastman Kodak Company and is known as the Type 11b sensitometer. Although this instrument has been described in detail before in the pages of this magazine, it is considered advisable to restate the facts concerning it in the columns of this article, inasmuch as this instrument has been generally accepted, in Hollywood at least, as the sensitometric standard for motion picture control.

The Type 11b sensitometer, shown in Figure 11, is designed especially to meet the needs of the modern motion picture film laboratory and sound department. It provides a precise and rapid means of making routine sensitometric tests for the control of development processes and for other purposes bearing on the production picture and sound prints of the highest quality.

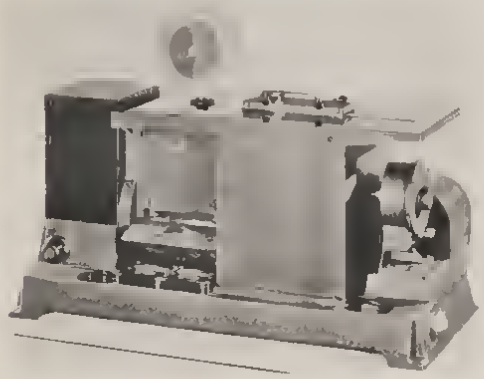

Fig 11

The particular advantage of the instrument, aside from its operating simplicity and ruggedness of construction, lies in its precision. It impresses on the film under test an accurately predetermined scale of exposures which may be maintained constant from test to test over long periods of time. This exposure scale consists of twenty-one steps produced by exposures equal in illumination and ranging from 1 to 1024 in relative times, each exposure being 1.414 (square root of 2) times as long as the next shorter. This constant factorial difference between steps permits the density readings to be spaced at equal intervals along the log E axis, in constructing a density-log exposure curve.

The instrument is shown in detail in Figure 12. This shows a partial vertical section through the optical axis of the instrument. "L" represents the standard lamp which is the source of illumination. A selectively absorbing filter, F, is placed in the path of the light coming from the lamp, L, in order to modify its spectral composition to the desired quality. A plane mirror, M, reflects the light at right angles thus illuminating the exposure plane, EP, in which the photographic material is placed during exposure. The rotating cylindrical

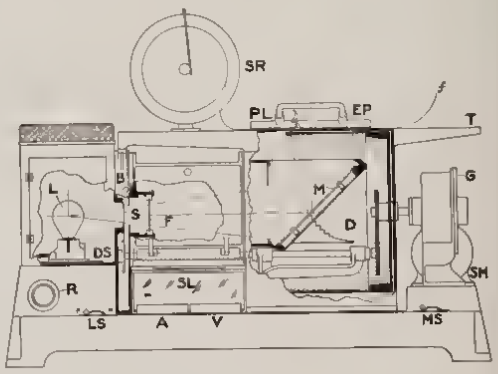

Fig 12

shutter or drum, D, having 21 exposure slots increasing in length by logarithmic steps from the shortest to the longest, controls the time factor of the exposure incident upon the adjacent steps of the exposure scale. The exposure plane is equipped with suitable guides so that two strips of 35 mm motion picture film may be placed in position and exposed simultaneously. The platen, PL, when pulled down serves to hold these strips accurately in the exposure plane during exposure. The drum, D, is driven at a constant angular velocity by a synchronous motor, SM. This motor runs at 1800 rpm when operated on a 60 cycle alternating current supply line and at 1500 rpm if operated on a 59 cycle alternating current supply line. The drum is connected to the synchronous motor through the reduction gear, G, consisting of a worm and worm wheel having 150 teeth, thus driving the drum at 12 rpm when operating on a 60 cycle line and at 10 rpm on a 50 cycle line. When the machine is started by throwing the master switch, MS, the motor drives the drum continuously at a very uniform angular velocity, the desired exposure being made by the operating of the selector shutter, S, which opens while the photographic material is protected from the exposing radiation by the opaque portion of the drum, D, and closes immediately after the series of slots in the drum have passed the exposing apertures. This selector shutter is connected to a one turn mechanism which is driven by a shaft directly connected by a pair of spur gears to the shaft carrying the rotating drum, D. The one turn mechanism is actuated by the bottom, B, thus opening the aperture O at the proper instant and closing it again after the desired exposures have been made.

Supplied with this instrument are two calibrated lamps, one for use in exposing positive film and one for negative film. The effect current in amperes, the voltage tolerance, and the distance at which the lamp must be set to produce the standard illumination on the exposure plane, are furnished with each lamp.

(Continued on page 44)

S. M. P. E. Notes

Starting with this issue, the AMERICAN CINEMATOGRAPHER will publish a page dealing with activities of the Society of Motion Picture Engineers Mr Sylvan Harris, Editor Manager of the S M P E, prepares the copy—The Editor

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Problems of Standardization

THE PRESENT year apparently is going to be quite prolific in giving birth to standards of dimension, not only in phases of the motion picture art already established, but in new ones as well The standardization of the aperture dimensions for 35 millimeter film has already progressed almost to the point of their acceptance, and it remains only to secure unanimity of agreement on relatively minor differences to establish them formally The inception of the new phase of motion picture technology, namely, the 16 millimeter sound-on-film, gives rise to the need of standardization of film dimensions, so that those who are and who will be economically interested in non-theatrical and amateur equipment will be able to proceed with their designs along fairly well defined lines that will be uniformly satisfactory to all concerned. By so doing, all chances of confusion due to lack of interchangeability of machines and film will be avoided.

The standardization of film dimensions, now being undertaken by the Standards Committee of the Society of Motion Picture Engineers, involves the following questions- (1) the distance from the picture gate to the sound gate, (2) the width of the sound track, (3) the dimensions of the scanning beam; (4) the width of the margins at the sides of the sound track, (5) the location of the sound track on the film, and (6) the size of the picture

S. M. P. E. Convention

The next convention of the Society of Motion Picture Engineers is to be held in Washington, D C, May 9th to 12th, inclusive This will be at the height of the Washington Bi-Centennial, and in addition to the usual attractions of the center of national interest, there will be much of a technical nature to attract members and visitors to the convention An especially interesting program of papers dealing with motion picture technology is being prepared by the Papers Committee, and in addition, an exhibition of newly developed motion picture apparatus, similar to the exhibitions at conventions in the past, will be held at the convention headquarters, the Wardman Park Hotel Everyone is invited to attend the convention, whether he is a member of the Society or not, full information can be obtained from the Society headquarters at 33 West 42nd Street, New York, N Y.

Committee Activities

Much activity is going on among the various S M P E committees, and many contributions to the art are expected from them this year The Projection Practice Committee is conducting an intensive study of the various causes of defective projection in theatres, and for that purpose is investigating the various tensions, clearances, and tolerances which exist in a projector when new, and the extent to which they may be allowed to depart from the original values before the machine requires overhauling In order to determine this, it is necessary that the projectionist be furnished with a knowledge of what these values are and should be, and how he may measure them in a simple and inexpensive manner The work of the Committee is expected to culminate in the suggestion of a design for a small kit of tools which will permit the projectionist to check his machines accurately and periodically

The Committee on the Development and Care of Film is conducting a careful study of the various methods of "processing," green film after its release from the laboratories, preparatory to projecting it This processing involves lubricating the surfaces or edges of the film in order to permit it to run through the projector without shedding emulsion and without collecting dirt or becoming scratched Many thousands of dollars are annually wasted by permitting film to be ruined in projectors due to the accumulation of emulsion or wax at the gates, which causes the film to be subjected to undue strains at the sprocket holes and elsewhere.

The preservation of film of historical interest is a matter of particular interest at the present time, in connection with the establishment of the new National Archives Building at Washington, D C, in which a department devoted to the preservation of such film is devoted The Committee on Film Preservation of the S M P E is conducting a study of the best means to be used for preserving film, not only with regard to its storage, but to the various methods of preparing copies for current use, the establishment of an appropriate library system whereby these copies may be put to good use and the original and first copies of the original may be maintained somewhat in the manner of standards and sub-standards.

The sub-committee on the Glossary is preparing to begin work on a revision of the glossary of terms used in the motion picture industry, which was last published in the November, 1931, issue of the Society's Journal The language of motion picture technology changes with time and with the development of the art, and so it is the work of the Committee to revise the glossary at least once a year, adding the new terms that are continually being created and revising the definitions of the older terms

The Projection Screens Committee, the Sound Committtee, and the Projection Theory Committee are all at work on various problems pertaining to the exhibition of pictures and the reproduction of sound In particular, the Sound Committee is this year concerning itself with the study of the acoustic treatment of auditoriums, and in this connection, the Society is endeavoring to enlist in this work the interest of the architects of the country Arrangements are being made whereby the American Institute of Architects and the Society of Motion Picture Engineers can each obtain the benefit of the other's experience

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Benoit Busy in France

GEORGES BENOIT, A S C, sends us word that he has been working steadily for the past two years with the Pathe-Natan Company of Paris This company has a plant that includes ten big stages, all completely equipped for sound Benoit recently finished photographing "Une Belle Garce," "Partir," directed by Maurice Tourneur, 'Au Nom de la Loi," also directed by Tourneur, and has started work on "les Gaietes de l'Escadron," which Tourneur is also directing It was twenty years ago that Tourneur staged this last named piece at the Theatre Antoine in Paris

Costuming and Cinematography

(Continued from page 15)

In the old days, before the introduction of the present super-panchromatic films, an additional restraint was imposed in the matter of color and material, but today we can use almost any color, and any material that is suited to the individual wearer And here psychology plays an interesting part, for while we could economize greatly by using monochrome materials, and substitute textiles, experience has shown us that the psychological effect upon the stars of such makeshifts is definitely bad Even the most experienced actress will give a better performance in clothes that combine the colors to which she reacts most favorably, and made of materials that are "the real thing" Conversely, she will subconsciously be inhibited by monochromes and makeshifts, even though they would photograph exactly the same as would the genuine colors and materials

In this connection, another phase of the importance of ample time for costume preparation must be mentioned Although we have, of course, an unusually accurate knowledge of the measurements and psychological reactions of each player, there would be a vast deal of benefit had we more time for fittings, not to improve the physical fit of the costumes, but to assure the psychological fit Unless an actress has time to become accustomed to a costume—to become so familiar with it that she becomes unconscious of it—she cannot be free to do her best work This may seem rather far-fetched, but in any sort of dramatic endeavor—and particularly in motion pictures—we are dealing so much with the emotional and psychological elements that no such details may safely be overlooked

This detail is particularly important in the case of period costumes, of course Period costumes are essentially unfamiliar to modern men and women, and to truthfully re-enact a period drama, the players must first of all feel absolutely natural about their clothes. Period designs are, in themselves, tremendously interesting They form the basis of all costume design, for current styles are always more or less adaptations of previous modes The Empress Eugenie hats and the current modified leg-of-mutton sleeves are examples of past modes revived with a modern touch adapting them to modern conditions The reverse of this treatment may often be used to good advantage in costuming period pictures, for unless some action or character in the picture definitely dates the story, the designer can, if he knows his periods, adapt the costumes of the approximate period of the story with a modern touch that makes for better psychology for the players, and makes the designs themselves more pleasing to modern audiences There is a precedent for this, in a way, in the fact that the old masters of the middle ages and the renaissance painted classic and biblical characters in costumes adapted from those current in the painter s day Similarly until the time of David Garrick, it was customary to enact classic and Shakespearean roles in contemporary dress The motion picture, of course, demands greater accuracy than this latter example, but, save in stories where the action is definitely dated, period costumes can advantageously be modernly adapted In the latter instance, of course, the strictest accuracy must be observed, particularly in periods like the '90's, and the Victorian era, which are still relatively fresh in the memories of the older members of the audience

As regards modern costumes, the motion picture wields a far greater power than most people actually in the industry realize But those who, like myself, have been connected with costuming and fashion creation before entering pictures, know that it was the American motion picture that broke the power of the Parisian fashion creators Women the world over no longer ask 'What is Paris going to wear?" but, "What is Hollywood going to wear? What will Joan Bennett, and Gloria Swanson, and Constance Bennett, and Norma Shearer, and Elissa Landi be wearing?" World-travelers bring back tales of slant-eyed Chinese maidens copying Clara Bow's costumes The daily press tells of foreign nations attempting to ban American films, ostensibly to safeguard the morals of their youth, but actually to protect their own clothing, furniture and apparel industries Yes, whether we realize it or not, Hollywood and its motion pictures have become the style leaders of the world. It is therefore up to us to design costumes and sets that are worthy of that leadership, and to design them so that the cinematographers can photograph them so that the world may best see and follow them

Agree On Image Area

THE MAJOR motion picture studios and theatre circuits have adopted a uniform practice governing the image area on 35 mm film for photography and projection which will result in an important improvement in photographic quality, according to official announcement by the Academy of Motion Picture Arts and Sciences

Companies which are putting the Academy specifications into effect for forthcoming productions include Columbia Educational-Metropolitan, Fox, Hal Roach, Metro-Goldwyn-Mayer, Paramount, RKO-Radio, United Artists, Universal, and Warner Brothers-First National

Studio camera apertures will be immediately adjusted to photograph an image 868" by 631" on the negative, with center line 7445" from the control edge, to be correlated to theatre projector apertures 600" by 825", with center line 7380" from the control edge, the difference being necessary allowances for shrinkage and mechanical tolerances

Specifications and instructions for adapting apertures, lenses, and screen masks will be distributed to the projectionists of all theatres in the United States during the next two months

The uniform practice will apply to all types of motion pictures made for exhibition in theatres and will supplant the different image areas used for disc prints sound track prints and silent versions It is expected to settle difficulties which have vexed studios and theatres since the introduction of talking pictures and to end the wide variation in projector apertures for which studios have had to provide in photography

Principle advantages of the uniform practice will be that when equipment is adjusted to the specifications, movable lens mounts, sliding aperture plates and other adaptive devices may be dispensed with in theatres, the likelihood of cutting off heads and feet of characters on the screen will be reduced, and both studios and theatres will be assured that the full height of the photographed image will be transferred to the screen Increased efficiency in photographic operations on the studio set will also be made possible through the matting out of wasted film area which it has been necessary to photograph to accommodate variation in theatre apertures

Projection of the picture image by the new specifications will result in screen proportions of approximately three by four in theatres with medium projection angles The screen will appear slightly wider when the picture is projected from a low angle and slightly taller in theatres with steep projection angles

The present agreement among the companies to adopt a uniform practice has developed from research, surveys and conferences between representatives of studios and theatres during the past ten months, under the sponsorship of the Academy Producers-Technicians Committee. For the past two years studios have been composing sound pictures according to temporary recommendations issued by the Academy until theatre projection conditions should become sufficiently stabilized to warrant establishment of more permanent specifications

Talking Pictures in India

Continued from page 12)

But that is far from a true picture of Indian business In Bombay, the Parsi colony, originally from Persia, forms the financial backbone of the industry Working with them are the driving forces of the Mohammedan and the quiet aggressiveness of the Hindu In Calcutta, Parsi, Hindu and Mohammedan share the executive and financial responsibility with the Brahmin and Marwari assisting in organizing and financing Bengal is predominately Mohammedan, and these people form a foundation of firm executive ability in most organizations Sikks, Pathans and other Hillmen form an excellent labor combination

Divide the parts and destroy the whole . has ever been the prime objective, when MANY are ruled by the FEW This fact can only be realized in its full extent by one who has worked with, and has the confidence of the "many" This confidence of my Indian friends I deeply treasure America will never learn of the burden under which India is struggling, from London censored news dispatches Neither will America learn of India from books such as "Mother India" . . . . appropriately classed by Mr Ghandi as "The report of a sewer inspector" Incidentally, this vile, imaginary and subsidized book, by an American authoress, has caused a deep distrust of Americans as a people, and undoubtedly greatly harmed India in the eyes of its readers in America Privileged to work with the people of India, it has been my pleasure to find that nowhere on this earth could be found a more honest, simple, unaffected and friendly people Today they are a frightened, harried people Confidence with and in, a 'European" is a rare quality, for over their heads hangs continually the sword of "Lawless Law" an espionage system rivaling that of the old Czarist regime of Russia . where for the most simple utterance of "disaffection" one just disappears . no trial no legal processes and the end is some deadly detention camp But above all of this rises the Indian man and woman a most beautiful picture of life

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New "Rico" Branch Office

THE RADIO Installation Company of 1404 Magnolia Avenue, Los Angeles announces the opening of a branch office and display room at 5510 Franklin Avenue, Hollywood The firm also states that they will have other important announcements within the next few weeks that should be of interest to independent oroducers

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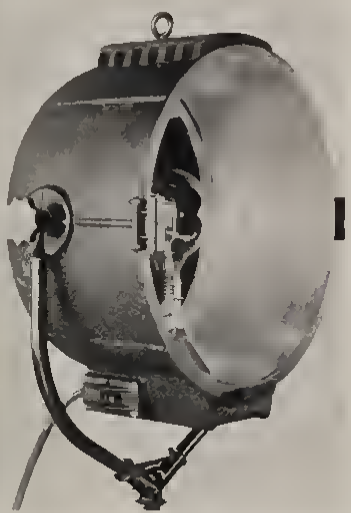
National Adds Cutawl

THE CUTAWL portable machine, a product of the International Register Co of Chicago, for use in making poster cutouts and clever advertising displays, has been added to the line of the National Theatre Supply Co.



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(See page 2)

Amateur Movie Making

by **WILLIAM STULL, A.S.C.**

IN MAKING any motion picture other than the most banal animated snapshots, the first and most vital considerations must be thorough preparation before the actual camerawork commences. Only in proportion as the preparatory work is perfect will the picture itself be perfect, and its accomplishment easy. This is quite as true of scenic films, by the way, as it is of dramatic or documentary ones. Of course, one can rarely prepare these as completely as one does the latter types, but one can always make certain rough outlines of what to shoot, and what not to shoot thereby facilitating the actual business of shooting.

The A-B-C's of Cinematography

Once the preparatory stage is passed, the technique of camerawork becomes of paramount importance. This is a subject upon which volumes have been written, obviously, this present article does not afford the space for an exhaustive discourse upon it. Yet, for the benefit of such readers as may be considering the entry of a picture in the American Cinematographer's contest, a few reminders of the fundamentals of cinematography, and a sketchy outline of various other more advanced features thereof may not come amiss.

The three basic features of cine camerawork are Exposure, Focus, and Camera-manipulation. The first two, of course, are "purely elementary, my dear Watson, el-ementary." Yet they still trouble a large corps of the army of amateurs. However, between the wide variety of accurate cine exposure-meters and photometers now available and the surprising latitude of modern 16mm emulsions, no one has any excuse for making a single incorrectly-exposed scene. If he has not the experience that enables him to judge exposure with his eyes, he can readily purchase it—in the form of one of these meters—for a few dollars. The same holds true of focus. If one's eyes are not good judges of distance, there are plenty of means of getting the proper focus, ranging from the ground-glass focusing methods offered in the de luxe Victor and Bell and Howell cameras and the correctoscope attachments, through a wide variety of optical range-finders to the range-finder of the professional camerman—the old-fashioned tape-measure.

The phrase "camera-manipulation" covers a multitude of sins. It begins with the ridiculously elemental business of holding the camera and proceeds through pans, tilts and camera-angles to the vastly abused perambulator and crane-shots of the professionals. But the essence of the matter lies in remembering that the camera is the audience's eye, the cameraman must make it see what he wants the audience to see, **the way he wants the audience to see it.**

Of course, the first thing is to hold the camera steady. If it is not steady, the picture on the screen won't be. For serious work, this means putting the camera on a tripod. Of course, most 16mm cameras are sold as hand-cameras—but very few of us have hands as steady as a tripod. And even if we had, there are moments when even the best of us are unsteady. Therefore a tripod, **always**, in serious work.

In panning and tilting, again remember that the camera is the eye of the audience. The medical gentlemen tell us that the human eye is blind when in motion, at any rate, the audience's eye is blind when the camera is moved rapidly. Therefore, make all of your pans and tilts slowly. Better than that, make them **too slowly**. Rehearse them, take a speed so slow that you think it is too slow—and then when you photograph the scene, pan (or tilt) **twice as slowly** as that. Then your speed should be about right! Above all, have a reason for every movement of the camera, don't fall into the habit of picking up the camera and waving it around like one of Mr. Capone's machine-gunners abolishing a roomful of hostile mobsmen.

Every pan and tilt must be made for a definite reason. That reason must be one of two: either to include some thing or action which cannot be included in a single, stationary shot, or to follow the course of some moving object. If, for instance, you are standing on the shore of a beautiful lake—say Crater Lake, in Oregon—and you wish to give the audience an idea of its size, as well as its beauty, you would have to pan, just as you would have to swing your own eyes to take it all in. Similarly, if you wanted to show the full, impressive height of Half Dome in the Yosemite Valley, you would do it best by tilting up or down, just as you would naturally run your eye from the bald, white top of the mountain to the valley at its base. Every shot of this type has a definite starting point, and an equally definite finish. If the scene is to be of the slightest value to the picture, the cameraman must recognize these two before making the shot, and take pains to begin and end his scene with them; holding the camera steady on the start long enough for the audience's eye to perceive it fully, then moving slowly and steadily on to the finish, and holding that for the same purpose. A pan or tilt that does not do these—particularly in a scenic film—is valueless.

Follow-shots are equally important, though usually more difficult to make well. The object followed must be held steadily in the centre of the field, and in good focus. In this case, of course, the speed of the object's motion governs the speed of the camera-movement. This is the only time when fast panning or tilting is good cinematography, the audience's attention is focussed on the object being followed, which is held stationary relative to the limits of the picture. Therefore, the fact that the background may be blurry and confused is of no importance. If you were, for instance, photographing Barry Wood or Orville Mohler going places with the ball in a football game, the interest would naturally be centered upon Wood or Mohler rather than upon the background of turf and stands.

Camera-Angles

Essentially, "camera-angles" refers to the placement of the camera. Actually, its meaning runs the gamut between the simple distinction of close-up, medium-shot, and long-shot to the cinematic subtleties discussed by Rouben Mamoulian in the last issue of this journal. First of all, of course, these simple meanings must be understood. The long-shot in its simplest form is a shot that includes the full figures of the actors, it may be just this, or it may also include a good deal of background, with the figures so small as to be of secondary importance. The medium-shot brings the camera closer to the actors, it usually includes only parts of the figures—say from knees or waist up. The close-up is the next logical progression, it may show the head and shoulders of the player, or it may be restricted to a big head. This latter, though, is difficult to make artistically, and should be avoided.

These various shots all have their definite places in camera technique, and, when properly combined, add variety to any

(Continued on page 43)

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Reflectors for Exterior Photography

by **CHARLES G. CLARKE, A.S.C.***

MOST OF US who have photographed close-ups out of doors in the bright sunlight are many times a little disappointed at the results on the screen, due to the unnatural reproduction of highlights and shadows. This is particularly noticeable in close-ups where one side of the face is extremely white and the shadow side unnaturally too dark. The film does not have the same power to accommodate and correctly register such extreme contrast of light as does the eye. To compensate for this unfaithful rendering of contrasts, these extremes must be reduced to obtain the most natural result on the screen, and this is done by reflecting light onto the shadows by artificial means. This can be accomplished by many highly reflective substances, such as common bed sheets. After trying all sorts of materials the professional camera men of Hollywood have found the "reflector" I am about to describe as the most generally useful when all of its requirements are considered.

While the studio men use every conceivable size and shape I would say a good size for the average amateur, considering portables and ease of handling, would be about 3 x 4 feet. Its best form of construction is to make it to fold in half like a book, as this protects the reflecting surface and reduces its size when folded, thus making it more practical to carry about. Two frames are made of 1 x 3" dressed pine or similar lumber, 4 x 1½ feet, and the corners firmly joined to stand rough knocking about. These are hinged together on the long side and each side is covered with a sheet of 3 ply veneer or composition board. The smooth surface can now be painted with a variety of reflective covering and each has its especial use. For average light conditions about the best reflector is obtained by first varnishing the veneer and then when the varnish has dried slightly, enough to be "tacking," powdered aluminum is dusted over and left until the varnish is dry. The surplus powder that has not adhered is knocked off and used over again. The surface reflects a soft diffused light, yet of sufficient brilliance to be projected quite a distance. The reader by now realizes that no one type of reflector is 'best" because after all they are used to modify every conceivable variation of natural lighting. The more critical worker has several types to reflect the different conditions. Roughly stated, the rule is the greater the contrast of natural lighting—i.e., the brighter the sunlight—the more need for brighter reflected light. The reflectors can generally be moved close to or from the object photographed until the right balance of light is achieved. Some of the other surfaces used are plain flat white paint, which is less reflective than the aluminum dust. Metallic gold powder when used with panchromatic film is valuable for the rendering of skin texture and blue eyes in large close-ups. This color of the surface has the effect of a filter and hence its value. The reflectors described so far have been for the lighting of close-ups. Of course, reflectors are used to throw light into dark rooms, under trees, and such places where there is not enough light, or the highlight and a central degree of contrast is not sufficient to render a brilliant picture. For this purpose light of a bright strong nature is required, so reflectors are made of tinned metal sheets attached to the frames. The flat sheets of metal reflect a pattern of light like a mirror, and some of the reflectors can be hammered here and there so that concave depressions spread the reflected light here and there. Many beautiful background effects can be obtained with this type of reflector, such as projecting the light through branches of trees to produce artistic shadows of light and shade. Obviously, this type of reflection is too brilliant to be used for portraiture. For the saving of weight and bulk both sides of the 'reflectors" are made use of, the soft, fragile surfaces inside, the backs covered with the metal sheets.

One of the greatest aids in good close-up exterior photography are 'diffusers." These are put between the object and the sun to soften the source of light when it is too bright. The contrast is thus reduced and a softer reflector can be used—or in many cases disposed of. This is often desirable, because many persons cannot stand the glare of a bright reflector, or have natural expressions when they are used. These "diffusers" are simply metal hoops of cloth, the cloth generally being white Chinese silk, or double thicknesses of cheese cloth. The hoops or frames are about 4 to 6 feet in diameter and can be made collapsible.

The use of reflectors in the hands of the inexperienced can be, and often is, abused. The most judicious placement of the reflector and its intensity must be correctly controlled, or the result on the screen will be more unnatural than if the scene had been taken without them. In the case of portraiture, the idea is not to equally balance the shadow side of the face with the highlight side, but to prevent the shadow side from recording unnaturally too dark. This discussion borders on the phase of lighting and no definite rules can be given,—that being up to the artistic ability of the camera man and his judgment in using the proper ratios of contrasts on each individual subject before his camera. As a rule women are photographed more beautifully when the sources of light are soft and diffused, and the contrast between highlight and shadow is not too great. Men require a more bolder—or contrasting—lighting. The extreme is reached when the contrasts are so great and the sources of light are from such unnatural positions as to produce the mental effect of unrest and unreality. Such lighting effects often enhance certain moods of mystery and intrigue and by some are known as "dramatic" lighting. To my mind drama covers all moods, and the skillful photographer will light his subject according to the thought of the scene depicted. Light, cheerful scenes require bright, brilliant photography, and sinister, mysterious moods are best conveyed by erotic lighting. While some people have more artistic ability than others, still in the case of lighting the science is built upon common sense rules. When we analyze lightings as they occur in nature, we find that the general condition is a bright sun above, which is the source emitting rays which pass through various diffusing mediums, such as haze and clouds, until they strike the object. Other rays are reflected back to the object from the ground and objects all around, and from the sky above, and they illuminate the shadows. If there was not this reflected light, the shadows would be absolutely black. The ratio, or "balance," between the direct light and reflected light varies constantly in nature. Inasmuch as the light source in nature is generally above us, we have adapted ourselves to this source of light and any other is unnatural. We are accustomed to see the shadows fall below the objects that obscure the light from above. Therefore when we want to light a subject by artificial means so that the lighting imitates natural lightings, the artificial source is placed

(Continued on page 37)

*Mr. Clarke is one of Hollywood's best known Cinematographers and has been photographing feature productions for many years. Back in the silent days you perhaps recall "The Red Dance" in which Dolores Del Rio starred. That was photographed by Mr. Clarke. And Mr. Clarke and George Schneiderman photographed 'Four Sons.' Among Mr. Clarke's sound pictures are "So This Is London," starring Will Rogers. 'Annabelle's Affairs.' 'Good Sport' and many others.—The Editor

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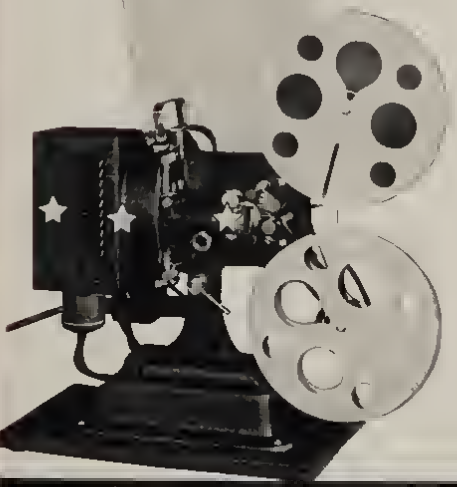

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Mickey Mouse and 16 mm.

by **WALT DISNEY**
Creator of "Mickey Mouse"

I SUPPOSE THAT during my working hours I ought to get more than my fill of motion pictures and cinematography, but apparently I don't. At any rate, I spend a large part of my spare time photographing things "on land and sea" with a little Victor 16 mm. camera. Cinematography is evidently in my blood for good and all—for before my cartooning days I was a cinematographer for the Pathe, Selznick and other news reels. During the time when Mickey Mouse was young, and I was building up the staff that produces his pictures and the "Silly Symphonies," I could find no time to indulge my fondness for photography but now that things are well organized, I am finding more and more pleasure and relaxation in making movies with my little 16 mm. camera.

A few months ago I took a trip, combining business and pleasure, to the east, through the canal, Cuba, Florida, etc. Before starting, my first thought was for a 16 mm. camera. The result was the Victor, not alone for its convenient portability, but for the many technical features that my newsreel experience had taught me to value. With it I managed to bring back many hundred feet of interesting films of my vacation. And from it I learned that, once you've made a start in cinematography, you can't stop—you're a cinematographer for life.

It had been some years since I had handled a motion picture camera, though, and I was constantly amazed at the improvements that have come in that time. Then, semi-professional and amateur cine cameras were great, bulky outfits, and quite difficult to operate. Today, if my little Victor is anything to judge by, such cameras are far different, small, easily operated, and amazingly complete. Lenses are tremendously faster, in those days, f 3.5 was considered very fast, even by the professionals. Today, f 1.5 objectives are in common use by the amateur. And film is tremendously better—more color-sensitive, and vastly faster than even the best that was available to professionals. Yes, the 16 mm. user of today is certainly a far luckier fellow than even the best-equipped professional of a few years ago.

When I bought my camera, I intended to use it entirely for my own pleasure. But Mickey Mouse intervened. He always does! Ever since I first drew him, he has become more and more real, and, like a real child, ingratiatingly demands more and more of my spare time. I had never expected that he would become interested in amateur movie making, though! But he fooled me, and did. I think it started while I was in St. Louis and visiting the wonderful zoo that they have there. Something (it must have been Mickey) whispered into my ear and asked me if I didn't realize how interesting it would be to have some films of the way the different animals and birds walked and flew, and how useful it would be in showing my animators how to draw them for the cartoons. I didn't pay too much attention to Mickey's urgings, for after all, I was on a vacation. But I did unlimber the camera, and shot a number of rolls of the various birds and beasts, telling myself, however, that I was doing it because they were so interesting to me. But when I got back to the studio, Mickey made me run the films for the animators, who got a number of ideas from them. Now I'm going to make more films of the same sort, doing them more carefully, and in slow-motion, so that we can really analyze the movements. One of the funniest such films I've made yet is of a pelican "taking off" from the water; it is really surprising the way he taxies along, and laboriously boosts himself into the air.

One of the questions that I'm most frequently asked is, "How do they make animated cartoons?" Not all of the people that ask this are laymen, by any means; many are users of 16 mm. cameras. These latter really should know, if they'd only stop and think it over. Look at a strip of motion picture film, it doesn't really move, it consists of a series of still photographs, taken in succession, and differing very slightly from each other. Well, imagine that each of these still photographs is a drawing, rather than a photo—and you'll have the basic idea of an animated cartoon. All you have to do is make your set of drawings and photograph them in order, one frame to the drawing, upon a strip of moving picture film. It can be done with an amateur camera—and patience. The Victor camera is well suited for this, since it has a provision for hand-cranking. The hand-crank shaft is geared so that each turn of the crank exposes eight frames, however, so a reduction gear is necessary, so that only one frame at a time is exposed.

But probably the simplest explanation of animated cartooning would be to trace the history of one of Mickey Mouse's pictures. They are made, of course, by a large staff, as we have to turn out a completed picture every two weeks or less. It is not a one-man job, though for amateur purposes one man—a patient one—could manage it all.

First of all, there must be a story. It must be short but complete, we have only seven minutes of screen time to start our story, tell it, and end it in each picture. In our pictures, both as to story and characters, we try to avoid the grotesque. Mickey and his companions may be strange, but we try to keep a note of believability in them and their actions, for all that. They may seem improbable, but not altogether impossible.

To tell our story, we make drawings of every movement: 10,000 to 12,000 drawings to each picture. But there are many short-cuts that reduce the amount of work to the minimum. The backgrounds are drawn upon heavy white paper, and the actors upon transparent celluloid sheets which can be placed above them. One man draws the background, and others, called animators, draw the moving characters. These animators do their work on drawing-boards in which are set glass plates, with lights under the glass. They draw the characters in pencil, on paper. When they finish one drawing, they can place another sheet over it, and, thanks to the light below, get the next stage of animation—the next drawing—matched up perfectly. Then by quickly flipping the two or more sheets, they can see if the action animates naturally.

From the animators, the drawings go to a group of girls who trace them with India-ink onto the celluloid sheets. These are then taken by another group of girls, who fill in the opaque portions (on the under-side of the celluloid) with black, white, or gray, as the animator may have instructed.

Then the "cells" and the background are brought together in the camera-room. The background is placed on a table, under the camera. The various cells (sometimes three or more, according to the number of moving characters) are placed on top of the background. Each sheet is fitted with perforations at top and bottom, which fit over registering pegs in the table, and keep all parts of the picture in their proper relationship. Then a plate-glass cover is dropped down over them, to keep them flat, and the picture is made. The cells are moved, the next one or ones substituted, and the next frame of film is exposed. Our cameras are motor-driven; they are fitted with an electric motor that is constantly running,

and a clutch which, when tripped, allows the motor to turn the camera just enough to expose one frame and stop with the shutter closed For illumination, we use mercury-vapor tubes, incandescent lights would do quite as well (in fact, we use them for making tests), but the mercury-vapor tubes do not generate any heat, and are far more comfortable to work under We use positive film for this work, as we have no need of either the speed or color-sensitivity of negative

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Reflectors

(Continued from page 34)

somewhat above the person or object to be photographed The reflected light comes from every angle all about and is therefore greatly diffused, and never equals the intensity of the direct light When the source of light comes from the uncustomary angle, such as from below the object, the shadows are cast upwards and an extremely unnatural effect is produced

These are the basic rules of lighting and I cannot attempt in this article to elaborate more Incidentally, a splendid explanation by a qualified artist appears in the 'Cinematographic Annual" and should be read by everyone who wishes to improve his work I wanted to mention these few rules here to illustrate the importance of placing the reflectors in the correct positions in relation to the subject to be lighted One of the very few cases where strong light is reflected from below is where snow is on the ground, as we all are familiar with the unusual lighting—and hence expressions of the faces about us In snow scenes, of course, that lighting is natural, but for the lighting conditions which we more usually encounter, we don't want to make the mistake of reflecting the light from beneath the object I have gone a long way about before getting to the statement of not to use the reflectors from the ground below the object But that is the general mistake, and I want to make it clear why it is wrong If the reflectors are used close to the actors, then the reflector should preferably be never lower than the line of the camera About the only definite rule in this respect is to try to imitate nature and reflect the light from angles such as she does To raise the reflectors up to where they belong, easels or some sort of adjustable support should be provided so that the reflector can be easily turned to various angles, as after all they are just another form of minor or spot light Easels or collapsible tripods with pegs for the various lights are generally used for this purpose By adding this apparatus to your equipment, a great many new lighting conditions will be opened up to you For example, the beautiful "back light" conditions which are so much used by the studio men, can be used by the 16 millimeter enthusiast if a few simple precautions are taken This type of lighting is produced when the objects are between the camera and the sun Instead of the old rule of having the sun at the photographer's back, he directs his camera towards it, although, of course, not shooting into it The objects are thus outlined in a halo of strong light and stand out strongly against the backgrounds Thus an effect of relief or third dimension is produced, and the hair is beautifully outlined with light To compensate the strong contrasts, light is reflected in to more equalize the ratio The lens must be shaded from the sun or otherwise the glass of the lens will flare and ruin the scene The 16 millimeter worker might try his next close-up by putting his reflector on a high easel and then shooting through the easel beneath the reflector, using the shade of the reflector to shade his lens Those shady dells under dense trees that look so beautiful to the eye, and flat and murky on the screen, can be used for backgrounds of appealing scenes when touched up with splashes of light Interior scenes can be made when the light can be reflected in If your reflector has to be in the shade to use it from its best angle, then reflect light on to it with a large mirror out in the sun There is no end of the combinations that can be used to the advantage of the photographer, and I hope this article has opened new possibilities to you

Scenarios For the Amateur

A NEW COMPANY, Home Movie Scenarios Inc, has recently been formed for the purpose of providing amateur movie makers with complete and practical scenarios suited to amateur requirements The concern is headed by Daniel B Clark, twice president of the American Society of Cinematographers, and at present photographing Tom Mix for Universal Associated with him are a number of well known professional writers, directors and cinematographers, all of whom are 16 mm enthusiasts as well as professional cinema experts

'Our enterprise," states President Clark, "grew out of our individual interest in 16 mm cinematography We have found a great deal of pleasure in making our own 16 mm photoplays with our families and friends rather than being satisfied with aimless animated snapshots. But we found that no really complete scenarios were available—so we proceeded to write our own In them we covered every slightest detail, not satisfying ourselves with mere descriptions of the action, but specifying camera-angles, footage costumes, properties, and the like Several of our friends who are also 16 mm enthusiasts, but not connected with the industry, have used these scripts, and the success that they have had in making their own photoplays in this manner has prompted us to make the scripts available to amateurs elsewhere

'The scenarios are of two types, short subjects and featurettes The former require but 100 feet of 16 mm film, the latter from 300 to 400 feet Knowing that the average amateur does not have facilities for title-making, we supply a complete set of titles for each picture, photographed on 16 mm film, on special art-backgrounds, with each script In addition, to facilitate editing the completed productions, we provide our H M S scene-numbering slate with which to number the scenes, that they need not be photographed in exact sequence

'We have stories of all natures, to suit every taste, and every degree of technical proficiency New stories are constantly being added to our list, and we likewise maintain a technical advisory service to aid the amateurs in the solution of all of their problems"

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New Zoom Lens

(Continued from page 16)

was called upon to solve an infinite number of problems involving calculus, squares, addition, division and even relativity

"It would seem that with one accurately generated, mere duplication would suffice to produce a second mechanism This would be so were all lenses exactly equal to their rated focal lengths Unfortunately even matched lenses would not answer and it became necessary to develop a vernier compensation for the value of focal length It is now possible to provide with scientific exactitude at every point for focal variations of less than 1 100 part of a millimeter This detail places the Durholz lens on a production basis without sacrificing the extreme accuracy aimed for While in excess of optical requirements this was considered desirable for reasons beyond the scope of the present article The optical work is in the hands of the outstanding lens makers of the country while the mechanical design is being carried out by a recognized precision shop of New York City The lens may be fitted to practically every type of camera"

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Will present one of the famous Max Factor make-up kits, completely equipped with every necessary article of make-up to the winner of the first prize of $500.00

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As announced last month, The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at $280 00, or a Filmo Model J. L. Projector, listed at $298.00 Second, a choice of any Standard Cooke Telephoto Lens, priced from $60 00 to $95 00. To be given to prize winners who made their pictures with a Filmo

◆

THE CASH PRIZES ARE

First Prize, $500.00 **Second Prize, $250.00**
Third Prize, $150.00 **Fourth Prize, $100.00**

Per piacere menzionare il Cinematographer quando scrivendo al annunziares

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of $500 00 for what its judges consider the best 16 millimeter picture submitted in this contest $250 00 will be given as second prize, $150.00 as third prize, and $100 00 as fourth prize, a total of $1000.00 in prizes

This contest is open ONLY to AMATEURS No professional cinematographer will be eligible to compete It is a contest solely for the amateur, either the individual or the club

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value And only silent pictures will be eligible for the contest The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision Announcement of the awards will be made as soon after the close of the contest as possible and checks will be mailed the winners

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest If you are not a subscriber just send in your check for a year's subscription and you are eligible

In the case of Amateur Clubs the following rules apply

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members Any club with more than 20 members will have to have a minimum of 10 subscribers among its members For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif, or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg, Hollywood, Calif

Enclosed please find Check, or Money Order, for $3 00 ($4 00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year.

Name .

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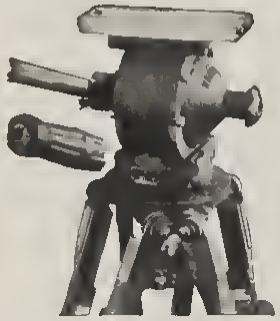
It is understood that this subscription makes me eligible to enter your $1000 00 Amateur Movie Contest.

New

TRUEBALL TRIPOD HEADS



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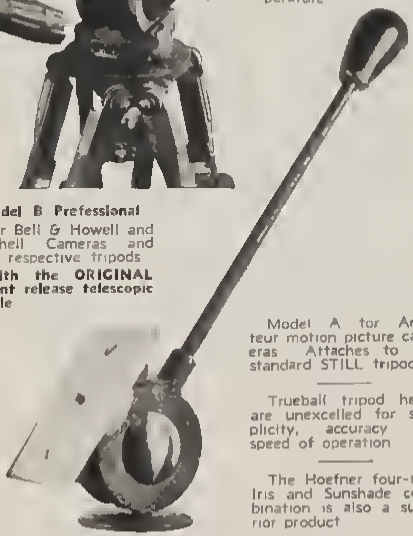

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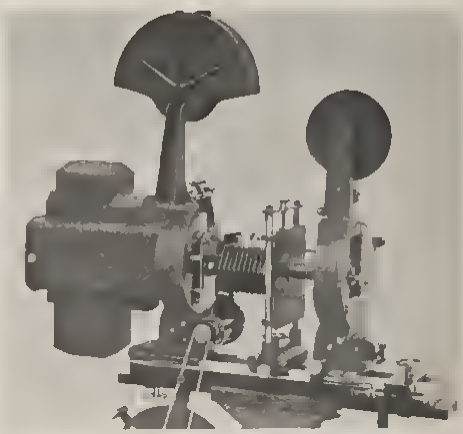
New Processing Rack for 16 MM.

THE PHILLIPS Laboratories of Westfield, N J, announce a piece of new equipment this month that should be of interest to amateurs It is a processing rack which enables the amateur to develop his own pictures

Step Printer for Amateurs



FOR THOSE serious amateurs who wish to do their own 16 mm printing, the ARRI optical printer, which may be changed easily to a 35 mm printer, is of considerable interest With this printer one may print trick shots, as for instance the reverse running of a picture

The printer is motor driven and the motor is mounted upon rubber cushions to eliminate any vibration This printer may be used to reduce from 35 mm to 16 mm as a straight 35 mm printer, or for printing 16 mm onto 16 mm The light control is effected by a separate half—automatic panel-board which is connected to the reduction printer, using a sliding rheostat for adapting the printing light to the density of the negative A four-place meter enables the operator to check at any time during the printing process, according to the registered numbers Altogether, quite an interesting bit of equipment Fritz Reichel of Hollywood is selling it

Latest Hollywood Novelty
A completely equipped miniature studio camera for your car radiator or as an ashtray for your desk
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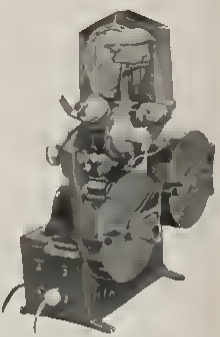

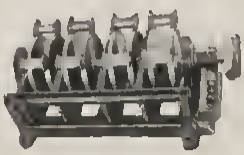

Write for descriptive literature

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Movies Record Earthquake Vibrations

HOW a 16 mm movie camera was employed in the Philippines for making a motion picture record of the needle movements of an instrument constructed for measuring earthquake vibrations, is interestingly told by I A Terry of the engineering department of the General Electric Company

"We are faced with the problem of making a vibrograph for obtaining a graphical record of earth vibrations, and this instrument had to be obtained as quickly as possible, and therefore with the materials available in the Philippine Islands," says Mr Terry.

"We made an instrument, the vibration mechanism of which was a Starrett dial test indicator held rigidly to the frame The dial was covered with a dull finished black paper, and the needle was given a high polish on the tip The glass was replaced by a deeply blackened metal sheet, with a small slit in it, covering an arc of about 20 scale divisions (mils). A beam of light was focused on the slit from a motion picture projector, with the light beam cut down by means of an aperture in a wooden block between the source of light and the dial test indicator. By this means the slit only of the indicator was illuminated

"The Filmo moving picture camera was used for recording the needle motion, the indicator being adjusted to such an angle that a perfect reflection of light to the camera from the needle was obtained, with the needle in the center of the slit The camera was modified to give a continuous, instead of an intermittent, film motion. The plane of the camera was set so that the plunges of the needle would traverse the width of the film."

◆

Telephone Camera Club At Smithsonian Institute

THROUGH the Telephone Camera Club of Washington, D. C., arrangements have been made to exhibit in the Photographic Salon of the National Museum of the Smithsonian Institute during the entire month of March the photographs included in the Telephone Camera Club 1931 exhibition. These pictures were originally exhibited in New York at 140 West Street, the New York Telephone Company Building, from November 30th to December 5th, and in Chicago from December 14th to December 19th, the attendance being 4,000 and 3,000 respectively

The Telephone Camera Club is a recently organized national association of Bell System Camera Clubs which are composed entirely of amateur photographers within the individual units of the Bell System Included in its membership are the Telephone Camera Club of Washington, D C, the Telephone Camera Club of Manhattan, the ERPI Camera Club, the Bronx-Westchester Camera Club, the Blue Bell Camera Club, and the Wekearnyan Camera Club.

The exhibit referred to above also includes a few pictures submitted by the employees of the Western Electric Company at Chicago, and the Pacific Telephone and Telegraph Company at San Francisco At the conclusion of the Washington exhibit, the pictures will be shown in Detroit, Mich., Kearny, N J, Brooklyn, N Y, and Bronx, N Y

◆

New Bass Catalogue

THE LATEST Bass Bargaingram has just been received For prices in keeping with the times and variety of subjects for amateur and professional including new and used 16 mm cameras, projectors and accessories, with a wonderful listing of text books for photographers, listed in the new Bass Bargaingram No 208B This is an interesting booklet This is the 22nd year of this popular bargain list and you should send for a copy It is free by writing to the Bass Camera Company, 179 West Madison St, Chicago, Illinois

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— Charles Bass

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I guarantee this new Electrophot to satisfy you or refund your $30.00 cheerfully. Ten days' trial allowed from date of receipt A photo electric cell of indefinite life is part of this meter Each complete in leather case size 4 x 4 x 1-3/8 Amateur or professional . you want this meter Send me your order promptly for immediate delivery

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A Practical 16 MM. Matte Box

A PRACTICAL MATTE-BOX, filter-holder and sunshade fo 16 mm cameras has just been announced by Home Movi Scenarios, Inc , of Hollywood The device enables the amateu cinematographer to use professional filters on any 16 mm camera, and to obtain effects hitherto unobtainable by ama teurs The device is mounted on the lens, and takes the stand ard professional 2-inch square filters

The matte box in use

In conjunction with this matte-box, the manufacturers hav announced special sets of professional filters, known as th Harrison-H M S filter sets These range in completeness an price to meet the needs of amateurs, advanced amateurs, an professionals The filters included in the various sets includ color-filters of the K and G series, red filters for night an moonlight effects, graduated filters, fog filters, diffusers, neu tral-density filters, graduated irises, and, in fact, the essential of a very complete professional filter-outfit, and the device wil undoubtedly be of inestimable benefit to amateur cinema tographers desirous of obtaining professional results with 1 mm equipment ◆

General Electric Announces the New Mazda Photoflood Lamp For Photography

A NEW PHOTOGRAPHIC light source, the Mazda Photo flood lamp designed especially for amateur motion pic ture photography and time exposures, has been announced b the Incandescent Lamp Department of General Electric Com pany at Nela Park, Cleveland, Ohio.

The new lamp, which burns on regular lighting circuits o 105 to 125 volts, resembles the standard 60-watt inside-froste Mazda lamp in bulb size and appearance Its extremely high operating efficiency causes its photographic effectiveness to b approximately that of a 750-watt general service lamp and re sults in comparatively short lamp life—120 minutes at 11 volts Five lamps fully load one circuit

The Photoflood lamp makes it possible for the amateur t obviate the costly failures which have attended some of hi indoor motion picture photography in the past and will enable him to obtain satisfactory results even with inexpensive cameras Both amateur and professional photographers wil find the Photoflood lamp an ideal source of illumination fo time exposures.

For best results the Photoflood lamp should be operated in reflectors designed for photographic service. In the absence of such reflecting equipment, lamps may be used in the regu lar ceiling fixtures and portable lamps.

With this lamp to complement the Photoflash lamp, which is more suitable for action snapshots, amateur and professiona photographers now have at their command light sources tha meet the majority of photographic requirements

Amateur Movie Making

(Continued from page 321)

type of picture It is always well to open a sequence with a long-shot to thoroughly "plant" the geography of the scene Thereafter, work progressively closer and closer to the object upon which the interest may be centered, using the various closer shots, and intermediates between them, as the action may permit Remember that, except in travel or scenic films, the actors are the important things, the closer we see them, the more clearly we show their actions, the easier it is to understand what is going on Therefore remember that, once the background has been planted in the mind of an audience it is relatively unimportant, and must be secondary to the actors and their action Too many closeups, however tend to slow down the action, so be wise, and use them intelligently

But camera-angles can do more than merely determine the size of the figures They can aid in making things look natural—in giving the picture the illusion of depth For instance, if we are photographing a girl in a light-colored dress, it is obvious that she will stand out more clearly against a dark background than against a light one, and vice-versa

As Mr Mamoulian pointed out last month the angle at which a scene is photographed has a tremendous bearing upon the way the scene will affect an audience Therefore, before choosing your set-up, consider carefully just how you want your audience to react to the scene

Another point to consider in choosing camera-angles is the speed of movement of the objects to be photographed The average 16mm camera has a shutter-speed equivalent to 1/32 second This is not nearly fast enough to "stop" fast moving objects, and give an unblurred picture of them Therefore, we must take refuge in camera-angles Instead, then, of photographing fast-moving objects such as races, airplanes, and the like from angles that make them move directly across the field, we must photograph them from angles that make them move either directly or diagonally into the picture The faster they move, the more nearly head-on we must photograph them, or, if we cannot do this, the farther away from them we must go And when we can photograph such subjects from the diagonal angles, they should always be coming into the picture—never going out of it

◆

Honor French Film Men

THE LEGION D'HONNEUR has been bestowed upon three more men who are prominent members of the film industry in France—Charles Jourjon, owner of the Tobis studios at Epinay; Felix Silly, and Paul Montel, director of the Technical Cinematographic School in Paris.

◆

U. S. C. to Produce Film

A MOTION PICTURE based on early Mexican history entitled "Montezuma's Daughter" is to be developed this spring as a "project" of a recently-organized experimental cinema laboratory of the University of Southern California It will be in charge of Dr Boris V Morkovin, a member of the advisory board of the National Committee for the Study of Social Values in Motion Pictures established by the Payne Foundation of New York

Prof Morkovin has been lecturing on the social and psychological aspects of the films at University College of S. C for two years, stressing the scientific, educational, historical, and artistic possibilities of motion pctures

16mm. Contestants Attention

Professional Cinematographers Positively Barred . . . BUT here's a tip to contestants make your 16 mm efforts rival professional 35 mm standard production **1st,** choose good equipment **2nd,** a subject of perfect facial photographic qualities **3rd.** Panchromatic film AND

PANCROSCOPIC "SILVERLEAF" REFLECTORS (for your exteriors)
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Portland Cine Club Activities

UNDER the able leadership of E J Schon, the Portland Cine Club, of Portland, Oregon, is making rapid cinematic strides At present the club is centering activities upon the production of an Oregon scenic film which will not only give the members an opportunity to show their cinematic ability but will boost the state as well If this film is completed in time it will probably be entered in the Amateur Movie Making contest of the American Cinematographer

The Club met in the Tyrolean Room of the Benson Hotel Among the features of the evening was Captain Frank Irwin of the Portland Police Department with his film showing how NOT to drive while intoxicated, etc The club now numbers nearly one hundred members, and a concerted drive is on to bring the number well over a hundred

◆

Laboratory Department

(Continued from page 281

The current flowing through the filament of the standard lamp is controlled by the rheostat and its value is indicated by the ammeter A volt meter is also provided in order to detect any lamp deterioration which might affect the constancy of results in precision work

The lamp for positive film is standardized for candlepower when operating at a color temperature of 2600°K Since this quality of illumination is probably somewhat yellower than that used on the average in the practical exposure of positive film, a selectively absorbing filter is provided which raises the color temperature and the radiation incident on the exposure plane to approximately 3000°K The lamp for exposing negative film is standardized for candlepower at 2360°K and with this lamp is used another filter which raises the color temperature of the radiation incident on the exposure plane to approximately 5400°K (mean daylight)

The exposure drum which controls the time factor of the exposure, to which the various areas of the photographic material is subjected, consists of a thin sheet of metal cylindrical in form, one end of which is mounted on and supported by a heavy cast iron wheel fixed directly upon the shaft of the reducing gears In this cylinder are cut a series of 21 openings, each 10 mm wide, the narrowest of which has a length as measured upon the circumference of the cylinder of 1 mm, while the longest has a length of 1024 mm The length of these openings form a logarithmic series, each one being the square root of two times as long as the adjacent shorter one.

The sensitometer is designed for operation on an alternating current line of approximately 110 volts, either 50 or 60 cycles If the line voltage is unsteady, it is desirable to use some form of voltage regulator, which addition can be obtained at relatively little increased cost

The actual operation of the instrument consists first of inserting and connecting the proper lamp The lamp switch is then thrown on after having made proper precaution that the proper filter for that lamp is inserted in the filter holder.

The main switch of the instrument is then turned to the ON position

The lamp current is set at the calibrated value by adjustment of the rheostat knob

After the lamp has reached a steady value of current and no further adjustment is necessary, the film is inserted into the exposure slot and the platen is pressed down on the film until it locks The release button is then pressed

The completion of the exposure is indicated by a bell signal.

Order Your Copy of the Cinematographic Annual NOW

Former Cameraman Opens Photographic Store in Westwood Village

HATTO TAPPENBECK, A.S.C., for many years engaged in the cinematographic profession in Hollywood, has deserted the motion picture industry and, together with H. F. Culver, has opened a photographic supply store and laboratories in Westwood Village, California.

The new concern, situated near the campus of the University of California at Los Angeles, will cater especially to the wants of the amateur movie makers and the amateur still photographers as well as offering commercial photographic service. A complete line of Bell & Howell and Eastman equipment is being handled by the new firm which is located at 10958 Weyburn Avenue. A projection room, cutting room, dark room and reading room are provided for all patrons.

◆

Who Said "Depression"!

IN A NATION-WIDE contest, participated in by thousands of the country's largest organizations, and sponsored by the General Electric Co., our own Motion Picture Trade received very favorable recognition.

In the sales campaign, which was not limited to any particular field several of the industry's better known factors were up near the top. Results were based upon the increase in sales for the last quarter of 1931, as compared to the same period in 1930. As an indication of the general trend of business, the reports shown were quite encouraging.

In the Metropolitan District, the outstanding leader and winner of the grand prize in that division was the S. O. S. Corp., of 1600 Broadway, New York. This company showed the astounding gain of over 400% in their business done during the Contest. The Officials of this progressive concern feel highly elated, for it reflects the great efforts which they have been making during the past year of depression.

FOR SALE OR RENT

FOR SALE OR RENT—A complete line of Photographic equipment. Projectors, Printers, Motors and Accessories new or used. Bargains in Mitchell, Bell & Howell, Akeley, De Brie, Pathe, Universal, Prevost, Sept, Leica cameras. Also every variety of Still cameras. Specializing in repairs. Hollywood Camera Exchange, Ltd., 1511 N. Cahuenga Blvd., HO-9431, GL-2507.

EVERYTHING PHOTOGRAPHIC—Projectors, printers, motors, lighting equipment, and accessories for 16 mm or 35 mm film. Bargains in Mitchell, Bell & Howell, Akeley, De Brie, Pathe, Universal, Prevost, Willart, De Vry, Eyemo, Sept, Leica. Also every variety of still camera. Specialize in repairs. Send for bargain catalogue. Open 8 A. M. - 10 P. M. Hollywood Camera Exchange, Ltd., 1511 Cahuenga Blvd., Hollywood, Calif. Telephones Hollywood 9431, Gladstone 2507. Cable Address: Hocamex.

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FOR SALE—Six 400 Ft. Mitchell Magazines cheap. J. R. Lockwood, 523 N. Orange St., Glendale, Calif.

FOR SALE—Mitchell Sun Shade & Matt Box. Single arm, bargain. Ries Bros. Inc., 1540 N. Cahuenga, Hollywood, Calif. Phone GR-1185.

FOR SALE—Bell & Howell Cinemotor, just like new, bargain. Ries Bros. Inc., 1540 N. Cahuenga, Hollywood, Calif. Phone GR-1185.

FOR SALE—Akeley Gyro Tripod, complete with fittings for B&H Mitchell or DeBrie. Combination front support for matte box or lenses. Brand new condition. Address Box X, Care of American Cinematographer.

FOR RENT—CAMERAS

FOR RENT—Two thoroughly silenced Mitchell Cameras. Follow focus device, Pan Astro Lenses, Freehead, 1000 Ft. Magazines. J. R. Lockwood, 523 N. Orange St., Glendale, Douglas 3361W.

FOR RENT—Mitchell camera fully equipped for sound. Harry Perry, Phone OX-1908.

FOR RENT—Mitchell Speed Camera, equipped for Sound. Phone Don B. Keyes, HE-1841.

FOR RENT—Mitchell high speed camera with latest 40, 50 and 75 mm. Pan-Astro lenses, 1000 ft. magazines, loose head, tripod. Pliny Horne, 1318 N. Stanley, HO 7682 or HO-9431.

FOR RENT—One Mitchell Speed camera fully equipped for sound, 40, 50 and 75 mm. and 4 and 6 inch Pan Astro lens. Norman DeVol, 6507 Drexel Ave., ORegon 7492.

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FOR RENT—Mitchell Motor, 1000 Ft. Mitchell Magazines. J. R. Lockwood, Glendale, Douglas 3361 W.

FOR RENT—Mitchell Camera Outfits for Sound. All accessories available. Ries Bros. Inc., 1540 N. Cahuenga, Phone GR-1185. Open till 9 P. M. Residence phone HO 1055.

FOR RENT—Mitchell Motor. Also Mitchell Motor adapter. Mitchell and Bell & Howell Cinemotors with counter and batteries. Park J. Ries, 1540 N. Cahuenga, GR-1185.

FOR RENT—Mitchell Gear Box with crank and shaft. Mitchell Motor, 1000 ft. magazines. Phone Donald B. Keyes, HE-1841.

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